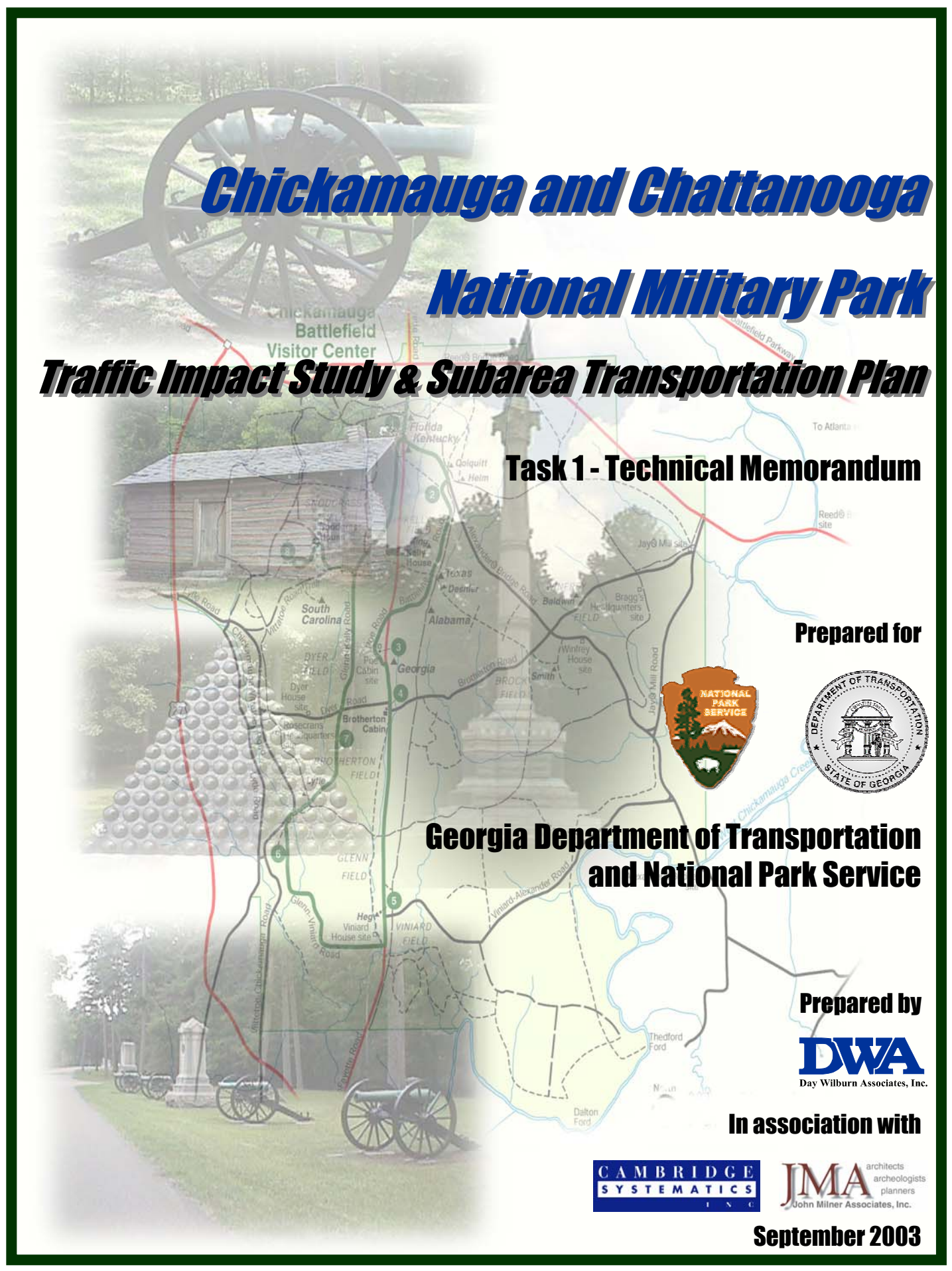
Chickamauga and Chattanooga National Military Park

Traffic Impact Study & Subarea Transportation Plan

Task 1 - Technical Memorandum



Prepared for

NATIONAL PARK SERVICE

DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA

Georgia Department of Transportation and National Park Service

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September 2003

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1 Introduction

The Task I Technical Memorandum is the first of four for the Chickamauga and Chattanooga National Military Park (CCNMP) Traffic Impact Study and Subarea Transportation Plan. The primary focus of this memorandum is to describe the study processes, present the study's goals and objectives, summarize the data collection effort, and establish and present the existing conditions, particularly travel patterns and cultural and natural resources.

The Chickamauga and Chattanooga National Military Park is a national historic site, a place that experienced strident conflict between North and South, and later saw a significant attempt at reconciliation for the two former enemies. The Battle of Chickamauga was part of a larger military campaign—the objective of which was for the Union army to thrust southward through eastern Tennessee and capture the town of Chattanooga, the junction point for four vital railroad lines that carried a large percentage of the Confederacy's arms, munitions, food, and other supplies. By the middle of September 1863, the Union had captured Chattanooga and was probing into north Georgia. Atlanta was its next objective.

After a series of small skirmishes along Chickamauga Creek, General Braxton Bragg's Army of Tennessee attempted to push Major General William S. Rosecrans' Army of the Cumberland north. On September 19, 1863, Confederate forces engaged Union troops along the important north-south supply route of LaFayette Road. While the two-day battle took place over a 20-square mile area, much of it was focused along a portion of this road. The Chickamauga Battlefield Unit of the CCNMP includes the core battle area. In one of the bloodiest battles of the war, Bragg's Confederate forces defeated Rosecrans' Army and forced a Union retreat to Chattanooga.

The Chickamauga Battlefield was designated a National Military Park on August 19, 1890, "for the purpose of preserving and suitably marking for historical and professional military study the fields of some of the most remarkable maneuvers and most brilliant fighting" of the Civil War. The Chickamauga and Chattanooga National Military Park owes its existence largely to the efforts of General H.V. Boynton and Ferdinand Van Derveer, who were instrumental in passing legislation that authorized the preservation of American battlefields and formed the basis of the establishment and development of a national system of military parks.[1]

The National Park Service (NPS), using funds provided by the Federal Highway Administration (FHWA), is conducting this study to investigate changes in traffic patterns in and around the Chickamauga Battlefield Unit of the CCNMP (herein referred to as the Battlefield Park) resulting from the completion of the US 27 relocation in Walker County, Georgia. Another concern is how population growth and development in the area could potentially impact Battlefield Park resources. At the request of the NPS, the Georgia Department of Transportation (GDOT) is managing and administering this study. Study partners include the Coosa Valley

[1] B. Morris, et al, *Cultural Landscape Inventory, Chickamauaga and Chattanooga National Military Park* (Atlanta: National Park Service, Southeast Regional Office, October 1997), 2.

Regional Development Center and the Chattanooga-Hamilton County Regional Planning Agency (RPA).

US 27 is a major component in the National Highway System and connects Tennessee with Florida. It is also a Georgia GRIP (Governor's Road Improvement Program) highway, so much of US 27 has been upgraded to a divided four-lane highway from a two-lane highway. US 27 formerly followed LaFayette Road, which traverses the center of the Battlefield Park. Since its relocation to the western boundary, traffic patterns have changed in and around the Chickamauga Battlefield.

The study is evaluating the impacts of the relocation within both the Battlefield Park and the surrounding communities. The CCNMP Battlefield lies in an area that is experiencing growth pressures from the adjacent Chattanooga urban area. Portions of Walker and Catoosa Counties and the City of Fort Oglethorpe are located within the Chattanooga-Hamilton County RPA area and are therefore subject to regional transportation planning under Chattanooga's Metropolitan Planning Organization (MPO). As growing bedroom communities for the greater Chattanooga area, development continues at a rapid pace, particularly along Battlefield Parkway (State Route 2), which connects the City of Fort Oglethorpe with Interstate 75.

Understanding the context of the Chickamauga Battlefield Unit of the CCNMP and its surroundings is critical to successfully reconciling the myriad concerns and issues that are in the Traffic Impact Study and Subarea Transportation Plan areas. While the Battlefield Park is a destination for tens of thousands of visitors each year, LaFayette Road (old US 27) still handles local traffic. There is a historic conflict of purposes between Battlefield Park visitors desiring a pastoral, serene visiting experience and the traveling public using the Park's roads to access surrounding areas. The Battlefield Park is also a recreational facility used by picnickers, bikers, walkers, and joggers, among others. Traffic on LaFayette Road poses a safety hazard between vehicles and people on foot and bicycles, particularly in times of high Park visitation.

Local concerns are an important part of the study. The study has engaged a broad cross section of the community in identifying transportation concerns and envisioning desired outcomes. Inclusion of governmental representatives, private business interests, the public, and National Park Service staff has provided a broad sweep of expectations for the transportation system in the study area.

2 Study Process

Components

The study's two components are the Traffic Impact Study and the Subarea Transportation Plan. The study efforts are closely coordinated to ensure that the recommendations address the interrelationships between the transportation systems. This study will evaluate current travel patterns in the study area, predict future traffic patterns and conditions, and recommend short- and long-term transportation improvements that address the issues and areas of concern identified in the study. All alternatives or recommendations resulting from the study will take into account the needs of both the Chickamauga Battlefield Park and surrounding communities, as well as impacts of future growth and development in the area.

The Traffic Impact Study area is outside the Chickamauga Battlefield Park in Catoosa and Walker Counties, in an area generally bounded by Three Notch Road, State Routes 146 and 193, and the City of Chickamauga. The recommendations from the Traffic Impact Study will be input into the Chattanooga MPO's transportation planning process.

The Subarea Transportation Plan study area encompasses the Chickamauga Battlefield unit of the CCNMP. Recommendations from the Subarea Transportation Plan will be reviewed by the NPS in preparing the upcoming update to the CCNMP General Management Plan.

Both the Traffic Impact Study and Subarea Transportation Plans are generally following the same process, which consists of four study phases. The phases are:

1. Data Collection – Gather and review data and relevant plans and documents on roadway characteristics, traffic, land use, socio-economic characteristics, and cultural and historic resources. Develop the study's goals and objectives through guidance and input from study partners and stakeholders.
2. Data Analysis – Analyze data to identify key issues, deficiencies, and needs.
3. Identify and Evaluate Alternatives – Identify and evaluate alternatives to address deficiencies, needs, and potential mitigation measures.
4. Develop Recommendations – Develop and finalize alternatives and recommendations with input from study partners, stakeholders, and the public.

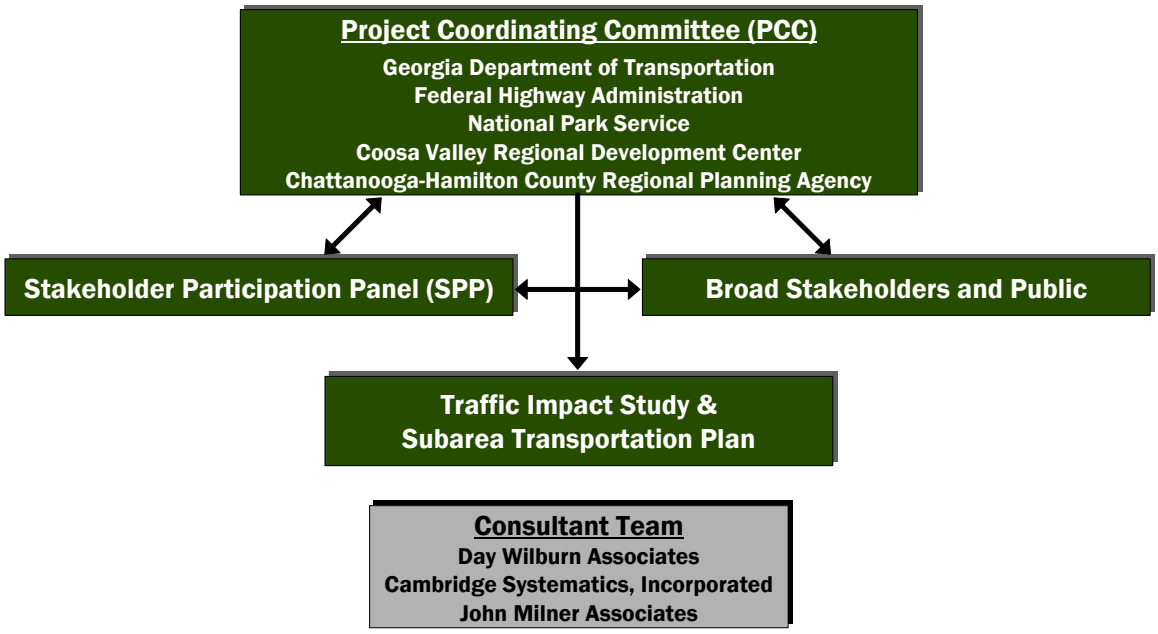
Stakeholder and Public Involvement

Stakeholder and public involvement is a vital element of the study. A Public Involvement and Coordination Strategy was prepared, reviewed and approved by GDOT, NPS and FHWA as a first step in the study. The strategy outlines activities and procedures for the inclusion of identified stakeholders, local government representatives, and members of the general public. The involvement strategy also set forth guiding principles for stakeholder and public participation, defined the roles and responsibilities of study participants, and outlined specific activities and techniques to be used. The overall goal for stakeholder and public involvement is

to achieve mutual understanding of the transportation needs of the CCNMP and its surrounding communities among all concerned stakeholders, develop a common vision for meeting transportation needs, and build support and consensus for the recommendations of the CCNMP Traffic Impact Study and Subarea Transportation Plan.

The CCNMP transportation study is a multi-agency effort. To direct the consultant team, a Project Coordinating Committee (PCC) was formed with representatives from each of the participant agencies: the Georgia Department of Transportation, the National Park Service, the Federal Highway Administration, the Chattanooga-Hamilton County Regional Planning Agency, and the Coosa Valley Regional Development Center. A Stakeholder Participation Panel (SPP) is constituted of representatives from various groups having interest in either the Battlefield Park or surrounding areas and includes representatives from Civil War groups, the local governments, the community, historic preservation groups, and natural resources and park groups. Input from broad stakeholders and the general public is an essential element to ensure the success of this process as well. Figure 2.1 shows the relationship between the PCC, the SPP, the public, and the consultant team. A list of the participants is included in Appendix A.

Figure 2.1 Project Organization



Meetings

The project team will conduct five meetings with the PCC, four meetings or workshops with the SPP, and three general public meetings throughout the study. The first PCC meeting was held May 2, 2003, at the Chickamauga Battlefield administrative building to kick off the study. This

meeting allowed for a dialogue between the project team and PCC to help set goals, objectives and performance measures to guide the study.

The second PCC meeting took place on July 15, 2003 following the first SPP meeting and public meetings, which were conducted at Constitution Hall in Fort Oglethorpe on July 14, 2003. The first SPP meeting in July presented the existing traffic patterns identified through traffic counts and the license tag survey; provided an overview of the travel demand modeling process; facilitated discussion on the key project elements: transportation and mobility, resource preservation, economic development, and recreation issues; and presented study goals, objectives and performance measures. A total of 26 SPP members attended. The first general public meeting introduced the study to the community at large and provided opportunity for public input. A total of 20 persons attended. A key feedback tool was a questionnaire developed to solicit feedback regarding public perception of existing transportation conditions in and around the Battlefield Park and desired future conditions. During these meetings, the following issues and concerns were raised for consideration during the study:

- Concerns were expressed about the lack of lighting at intersections along the US 27 relocation.
- People are using the Battlefield Park in different ways – active recreation, such as hiking and cycling, compared to commemorative (viewing the historic and cultural features).
- Fort Oglethorpe businesses expressed concern about what they view as a loss of business from the large traffic decrease on LaFayette Road.
- Walker County is developing an overlay district plan for the west side of the Battlefield Park; they are attempting to ensure that commercial development respects the historic issues.
- The need to establish reasonable restrictions on roadways to and from the Battlefield Park must be addressed – balancing the Battlefield Park's need to preserve its historic and cultural features within the broader community's objectives related to travel, access and economic development.
- Responsibilities for providing recreation in the community must be defined. The CCNMP's role is commemorative – preserving the historic and cultural features and enabling visitation of the resources. The entities responsible for providing the other recreational activities, such as active recreation, should be identified.
- Bicycle and pedestrian access to the Battlefield Park should be emphasized. The South Chickamauga Greenway was mentioned as one important connection. In addition, it was suggested that the Plan address the location of trails as well as support parking. The gateway communities were suggested as appropriate locations for parking. The MPO and NPS could express support for these projects as part of future project funding applications.
- The Plan should include layers illustrating the surrounding community's recreation features and trails, as well as connections to locations outside the study area.

- The alternatives should include additional signage directing motorists to roads, including US 27. The MPO is completing a Wayfinding Study, which could be applicable to the current study.
- Walker County is undertaking a review of businesses in relation to the US 27 relocation and is addressing design and land use considerations at intersections. This could also have implications for this study.

Stakeholder Mailing List

A key element of any successful public involvement strategy is the development of a comprehensive mailing list. A mailing list of local and national stakeholders was developed early in the study and is updated regularly. The list includes addresses, telephone numbers, e-mail addresses, fax numbers, and other information to aid in contacting stakeholders in a variety of ways. The list is used to reach stakeholders with announcements of upcoming events, meeting invitations, newsletters, and other information about activities.

Website

An informational website was developed to provide study information, schedule, and status updates. The website was hosted by the GDOT in May 2003, and it will be updated throughout the study.

Newsletter

There will be four newsletters overall. The first newsletter was published in June 2003 and was dedicated to introducing the study to the community. The newsletter was distributed at stakeholder and public meetings and published on the project website. The newsletter was also mailed to over 40 SPP members for distribution to their constituencies.

News Articles

To promote broader dissemination of information about the study, news articles will be developed over the course of the study. Numerous organizations and groups have been encouraged to submit request forms to be on the distribution list for the articles that they can use for reprinting in their publications. The news articles are circulated to the local media and stakeholder groups for inclusion into newsletters and websites.

Media Outreach

A media outreach effort has been implemented to increase both attendance and participant diversity at public information meetings. Media outreach efforts are supported by developing information materials for distribution to encourage attendance at meetings. Publicity for public involvement activities has been generated through the use of press materials, such as press releases, fact sheets, and speaking bullets for use by GDOT Communications and District staff.

The study budget included paid advertisement. Paid ads were placed in the *Catoosa County News*, the *Walker County Messenger*, the *Chattanooga Times Press*, the *Civil War News*, and several other civil war newsletters.

Environmental Justice

Identification of Populations and Outreach Efforts

The project team has placed emphasis on identifying environmental justice (EJ) stakeholders and notifying them of study activities to ensure that the concerns and needs of low-income and minority populations in the study area are considered. Because of the study's funding source, the consultant team must meet the requirements of Title VI, Executive Order 12898 and Section 450 of Transportation Equity Act for the 21st Century. These federal regulations and guidelines require that transportation plans and programs provide a fully inclusive public outreach program. They require that recommendations do not disproportionately impact minority and low-income communities while also allowing these groups to fully share in the benefits of transportation infrastructure investments.

Because the EJ communities in these counties are very small and dispersed, the consultant team implemented an outreach program primarily focused on person to person outreach with local organizations and agencies through phone and written contacts to encourage participation and input. Organizations in the study area being contacted on an ongoing basis include community and neighborhood groups, community service organizations, religious organizations, and churches.

A database of over 200 contact names and relevant information from these organizations and agencies has been developed. The database is used for mailing information such as surveys, fact sheets, and newsletters and maintaining an ongoing record of communication with these groups. As such, outreach efforts are building a network through which project information can continuously be disseminated and interest stimulated. Newsletters, fact sheets, and surveys have been sent to each contact for personal use or distribution to the public. To date, 10 of the 50 surveys returned were from representatives of the EJ communities in the study area. The feedback from these groups has been incorporated into overall survey results.

With support and assistance from staff of the Coosa Valley Regional Development Center and the Chattanooga-Hamilton Regional Planning Agency, outreach efforts will also be coordinated with local events or meetings, where possible, to allow participation from a broader cross section of the study area population. Media/community outreach also includes a few outlets with low-income and minority audiences.

A complete list of EJ outreach contacts is included in Appendix A. Future updates of EJ outreach efforts will continue through the next public information meetings and will be provided as the project continues. This will support the documentation of the public involvement and environmental justice outreach efforts for the final report.

Evaluation of Potential Impacts

The identification and mapping of minority and low-income communities in the study area has not only assisted with outreach efforts, but will also assist in identifying the potential impacts, both positive and negative, of proposed transportation improvements. The evaluation process and findings will be documented in the study's final report.

Minority and low income areas are located in small pockets in the study area. The maps in Figures 2.2 and 2.3 illustrate where the highest concentrations of minority and low income communities are found in the study area. Using 2000 Census data, the maps show the location (by Census block group) of those communities which exceed the combined average minority population (4.3 percent) for Catoosa and Walker Counties and the combined average population of both counties which fall below poverty level (11.1 percent), respectively. Georgia's population living below the poverty level is 13 percent and its minority population is over 37 percent.

As shown in Figure 2.2, there are significant concentrations of minority groups in the study area, particularly in and around Fort Oglethorpe. These block groups are made up primarily of African-Americans, which make up three percent of the population. Hispanics make up only one percent. Figure 2.3 shows the area with the highest concentration of population below poverty level, which is also in and around Fort Oglethorpe.

Based on these maps, the following types of system deficiencies will be identified and mapped against the low-income and minority areas identified:

- Safety deficiencies
- Infrastructure deficiencies
- Congested areas
- Intersection deficiencies
- Areas with higher than average truck volumes

Recommended system improvements in areas with low-income and minority populations within the study area will be mapped and evaluated for potential positive and/or negative impacts. The consultant team proposes the following project-level evaluation measures to assess the impact of transportation improvements on low-income and minority communities:

- Identification of congested areas in low-income and minority communities
- Number of improvements
- Crash rates
- Identification of safety deficiencies in low-income and minority communities

Figure 2.2 Distribution of Minority Population

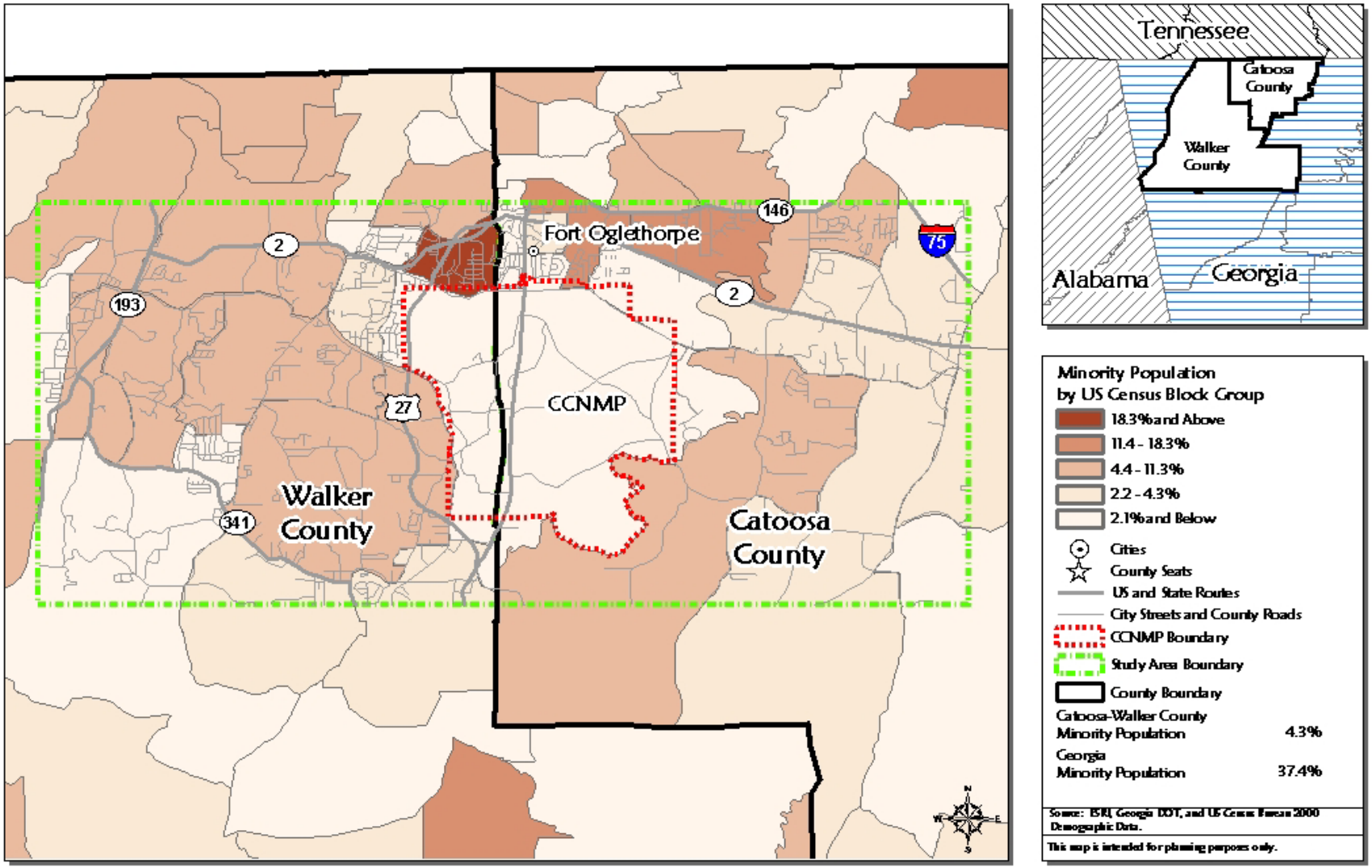
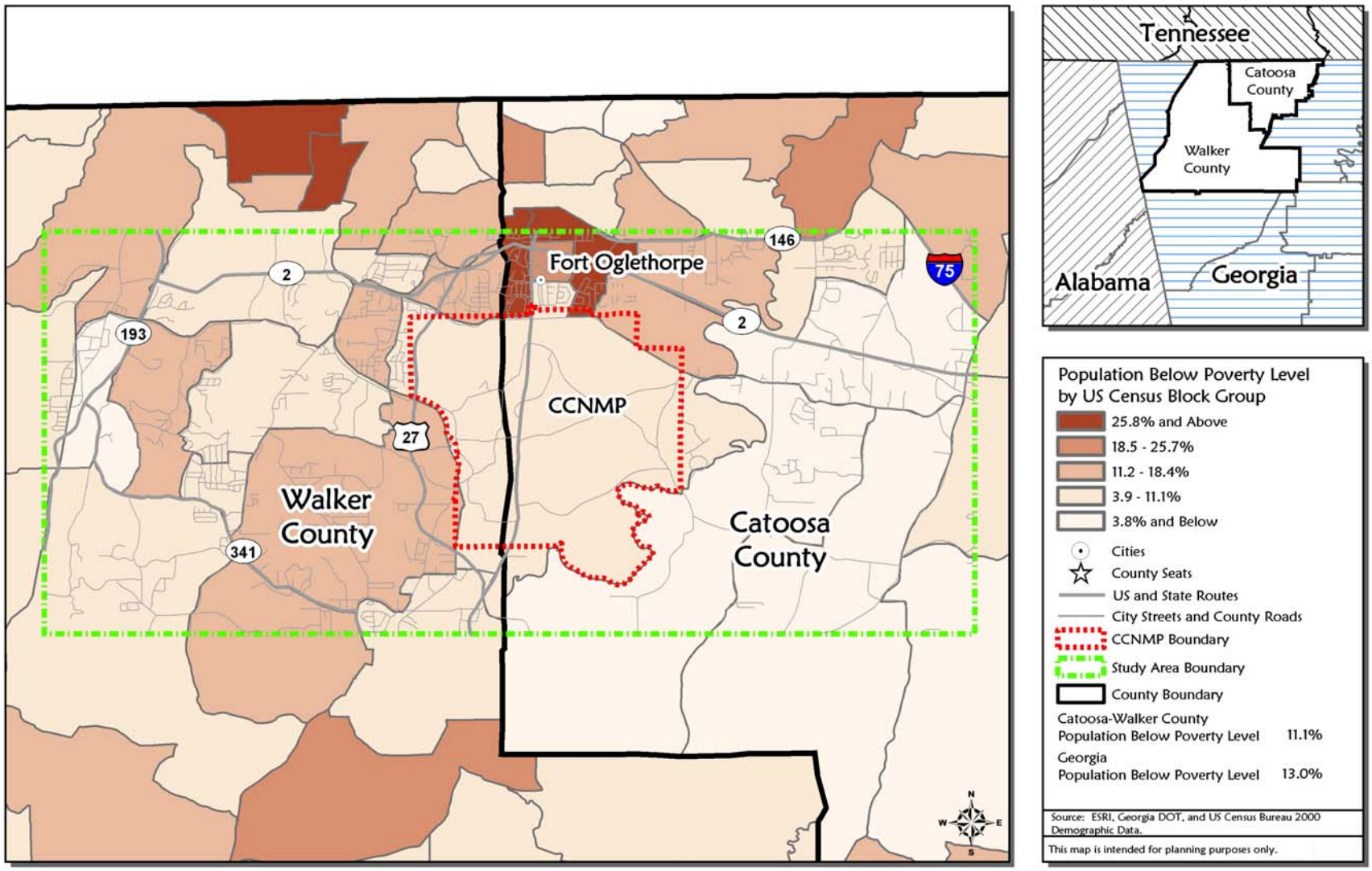


Figure 2.3 Distribution of Poverty Below the Poverty Level



Study Goals and Objectives

An essential part of the CCNMP study was to define the goals and objectives to guide the development of the overall study. In conjunction with input from the SPP and PCC members, four broad goals were developed, two each for the Traffic Impact Study and Subarea Transportation Plan. The study's goals are shown in Table 2.1.

Table 2.1 Study Goals and Objectives

Goals	Objectives	Performance Measures
Traffic Impact Study		
To ensure that the transportation system meets the mobility needs of the community and region.	• To provide a safe transportation system. • To promote the development of alternative modes and connections between modes. • To improve north-south connectivity east of the Chickamauga Battlefield Park area.	• Traffic Volumes • Level of Service • Accident Rates
To increase the attraction of the US 27 relocation for commuters (motorists not destined to the Battlefield Park).	• To ensure that non-Park traffic uses other alternatives. • To ensure that the community transportation system can accommodate existing and future needs and provide easy access to US 27 relocation.	• Traffic Volumes • Level of Service • Percent Split (% local and through traffic)
Subarea Transportation Plan		
To minimize adverse impacts of traffic and transportation usage on the Chickamauga Battlefield Unit of the Chickamauga and Chattanooga National Military Park and its resources.	• To reduce non-Park vehicular traffic volume on Park roadways. • To provide adequate transportation facilities for Park users on Park property. • To provide an exceptional visitor experience.	• Traffic Volumes • Percent Split (% local and through traffic) • Level of Service • Parking Utilization
To develop feasible transportation strategies that will respond to anticipated future growth in the area and in the Battlefield Park.	• To identify transportation alternatives that reflect the unique needs of the Park in preserving its role as a historic resource. • To identify what local communities can do with land use development to complement and protect the Park (minimize impacts of traffic on the Park).	• Traffic Volumes • Number of Tourists • Economic Value/Tourism • Feasible Implementation Recommendations

3 Overview of Task 1 Activities

The purpose of Task 1 was to establish the baseline conditions on which to perform the remaining study tasks. A thorough data collection effort was conducted to identify issues, planned projects, and existing travel patterns in and around the Battlefield Park. Where data gaps existed, new data was collected. Goals and objectives were developed to guide the study. The data collected was summarized through the use of graphical and spreadsheet tools, and a preliminary assessment of the data was performed.

Data Collection of Existing Data

The nature of this study differs from the traditional transportation study or traffic impact study because the needs and issues must be considered within the context of the natural and cultural environment. A thorough understanding of the needs and issues both inside and outside the Battlefield Park is important. This means that the data collection effort draws upon a broad range of sources using a variety of means so that an accurate and complete baseline is established. Coordination and consultation with the PCC, SPP, and the general public helped identify issues and define the affected communities and project context. Existing data was collected from the various agencies and organizations to help identify planned projects, understand travel patterns, and define the historic and cultural context within the study area.

Once the data was collected, data synthesis took on many forms, but primarily Geographic Information System (GIS) and other mapping tools were used to present and summarize the data. A quantitative analysis of traffic volumes and travel patterns was conducted, and the results were shown through mapping. Planned projects and desired conditions were summarized in a tabular fashion and also mapped.

The types of available and existing data collected for this effort can be generally grouped into the following categories:

- Socio-economic data
- Traffic operations and usage, including crash data
- Roadway characteristics
- Transportation and land use plans
- Historic and cultural resource documents
- National Park Service policies and plans
- Chickamauga and Chattanooga National Military Park plans and policies

Table 3-1 summarizes the existing data collected, the data source, whether it is primarily used for the Traffic Impact Study (TIS) or Subarea Transportation Plan (STP), and how the data is being integrated into the study.

Table 3.1 Existing Data and Utilization

Data Description	Source	TIS	STP	Study Use
Traffic				
1997 - 2002 Daily Traffic (AADT)	GDOT	✓	✓	Evaluate traffic volumes, perform cut-line analysis, and validate model
1999, 2001, 2002 Traffic Counts	NPS Traffic Count Program		✓	
Travel Demand Model				
Chattanooga MPO MINUTP Travel Demand Model 2000, E+C, and 2025 Networks	Chattanooga-Hamilton County Regional Planning Agency	✓	✓	Establish existing travel patterns and forecast future travel patterns and trip production
Roadway Characteristics				
Roadway Inventory (Major Roadways and Collector Streets within Project Boundary) in and outside of Park	Field Verification, Aerial Photography, Cultural Resources (GIS/NPS 1996-1997), and GDOT	✓	✓	Perform GIS base mapping, define base conditions
Traffic Control Inventory (Signals, Posted Speed Limits, 4-way Stops)	Field Verification	✓	✓	Develop baseline inventory
Lane Geometry	Field Verification, Aerial Photography	✓	✓	
Trails, Pull-Offs, Park Signage, and other Transportation Features within Chickamauga Battlefield	Cultural Resources (GIS/NPS, 1996-1997)		✓	Perform GIS base mapping
Accident/Crash Data				
1996, 1997, 2002, 2003 (Jan.-May) Motor Vehicle Crash Logs	CCNMP		✓	Evaluate traffic safety issues within Battlefield and study area
2001, 2002 Accident Records	GDOT	✓		
Aerial Photography				
3.75 Min Ortho Color Infrared (CIR) Photos 2001 (East Ridge Quad; Ft. Oglethorpe Quad.)	Georgia GIS Clearinghouse	✓	✓	Perform GIS base mapping

Table 3.1 Existing Data and Utilization, continued

Data Description	Source	TIS	STP	Study Use
Transportation and Land Use Plans (Short and Long Range Transportation Projects)				
US 27 Reroute NEPA Documentation (1989)	FHWA Eastern Federal Lands	✓		Review environmental impact statement
Construction Work Program for Walker and Catoosa Counties	GDOT	✓		Identify short range transportation projects in study area
Walker County Comprehensive Plan/Land Use Plan	Coosa Valley RDC, Walker County	✓		Identify short range transportation projects and land use
Catoosa County Joint Comprehensive Plan 2020 (includes Ft. Oglethorpe and Ringgold)	Coosa Valley RDC	✓		
Regional Sewer Study	Conducted by Arcadis for Chattanooga Economic Development Administration	✓		Aid in defining future development issues for modeling
Walker County Overlay Plan for Land Adjacent to US 27 Reroute	Walker County	✓		Review overlay plan for land use policies and objectives for US 27
Chattanooga Urban Area Transplan 25, Long Range Transportation Plan 2025; Adopted June 2000	Chattanooga-Hamilton County Regional Planning Agency	✓		Identify planned long range transportation projects
Georgia State Transportation Improvement Program (Walker and Catoosa Counties)	GDOT	✓		Identify short term transportation projects in study area
The Georgia Portion of the Chattanooga Urban Area Transportation Study TIP Projects FY 2004-2006, 3/27/03	Chattanooga-Hamilton County Regional Planning Agency	✓		
Chattanooga Urban Area Bicycle Facilities Master Plan, April 2002	Chattanooga-Hamilton County Regional Planning Agency	✓	✓	Review long range planned bicycle facilities in study area
Chattanooga Area Wayfinding Plan and Graphic Standards Manual (2003)	Chattanooga-Hamilton County Regional Planning Agency	✓		Provide standards for wayfinding in and around Battlefield

Table 3.1 Existing Data and Utilization, continued

Data Description	Source	TIS	STP	Study Use
Socio-Economic Data				
Demographic Data	U.S. Census, 2000	✓		Identify EJ communities, journey-to-work, population, employment, etc.
Historic and Cultural Resources				
Chattanooga Area Civil War Sites Assessment	American Battlefield Protection program, et al	✓		Identify Civil War battle locations and desired conditions for Battlefield gateway areas
Georgia State Historic Preservation Office				
Park Plans and Policies				
Federal Lands Alternative Transportation Study (USDOT, 2001)	NPS		✓	Provide understanding of NPS policies
2001 NPS Management Policies (Chapter Two, Park Planning)	NPS		✓	"
Director's Order #2 (Park Planning)	NPS		✓	"
Director's Order #12 (NEPA)	NPS		✓	"
Director's Order #27A (Transportation Planning Guidebook)	NPS		✓	"
Director's Order #27B (Transportation Planning Guidebook)	NPS		✓	"
Alternative Transportation in the NPS	NPS		✓	"
Director's Order #87D (Non-NPS Roads)	NPS		✓	"
Visitor Experience and Resource Protection (VERP) Guidelines	NPS		✓	"
NPS Road Standards	NPS/FHWA		✓	"
Traffic Impact Analysis, Gettysburg National Military Park (Draft Report dated July 21, 1994)	FHWA/NPS		✓	Conduct peer review

Table 3.1 Existing Data and Utilization, continued

Data Description	Source	TIS	STP	Study Use
Chickamauga Chattanooga National Military Park Plans and Policies				
Administrative History of Chickamauga and Chattanooga National Military Park	CCNMP		✓	Define historic and cultural context within CCNMP
CCNMP General Management Plan, Development Concept Plan, Environmental Assessment	CCNMP		✓	Provide planned projects, goals and objectives within CCNMP
Chickamauga Annual Performance Plan /CCNMP Government Performance and Result Act; FY 2003			✓	
Management Objectives Workshop (August 9-10, 1994)			✓	Define management principals for CCNMP
Theme Statements (1998)			✓	Define CCNMP interpretive message
Theme Implementation (1998)			✓	
1979 through 2002 Park Visitation Data (Annual and Monthly Visitation of Recreational and Non-Recreational Visitors)	NPS		✓	Evaluate historic visitation trends
Cultural Landscape Report: Part I, 50% Draft (March 2003)	CCNMP/John Milner		✓	Understand cultural resource element of CCNMP
Historical Resource Study: 1999			✓	
Park Boundary, Cannons, Monuments, Markers, Buildings/Structures	Cultural Resources GIS/NPS, 1996-1997		✓	Perform GIS base mapping

Note: TIS-Traffic Impact Study, STP-Subarea Transportation Plan

As shown in the table, most of the 24-hour traffic counts collected within and surrounding the study area were provided by GDOT. The NPS also provided additional 24-hour counts inside the Chickamauga Battlefield Unit of the CCNMP.

In addition to traffic counts, the consultant team obtained the adopted Chattanooga Metropolitan Planning Organization (MPO) MINUTP travel demand model from the Chattanooga-Hamilton County Regional Planning Agency, via the Tennessee Department of Transportation (TDOT). Three datasets were received, which included the 2000 model, Existing plus Committed (E+C) model estimated for the year 2005, and the 2025 Long Range Transportation Plan (LRTP) model.

As part of the Chattanooga MPO's 2025 LRTP, an origin and destination (O/D) survey, as well as a household behavior survey, was initiated. Although results from the origin and destination survey were not available in time for this study, they can be compared to the results of surveys conducted for this study once they are available. It will not be feasible to incorporate the updated household behavior survey data into the model as part of this study due to schedule and budgetary limitations. Household survey data, specific to the Subarea Transportation Plan, might be useful solely as a supplement to model information on travel patterns.

Compilation of cultural and natural resources data was conducted by John Milner Associates, Inc. (JMA). JMA was contracted by the NPS in 2002 to prepare a Cultural Landscape Report (CLR) for the Chickamauga Battlefield Unit of the Chickamauga and Chattanooga National Military Park. A Cultural Landscape Report (CLR) is the primary report that documents and evaluates the history, significance and treatment of a cultural landscape, including any changes to its geographical context, features, materials, and use. The CLR includes Part I, Site History, Existing Conditions, and Analysis, which documents the evolution of the site's cultural landscape resources and determines the origin and significance of existing landscape features within the site's boundaries. It includes a physical history of the landscape's evolution; historic photographs and illustrations; existing conditions documentation, photographs, and base maps; a comparative analysis of existing and historic conditions; identification and evaluation of significant character-defining features; and evaluation of historic integrity. This report is currently under development. A draft of this study was distributed to the consultant team to provide background information on the natural and cultural resources found within the Battlefield Park and serve as the basis for further analysis.

The feature data that was collected for preparation of the CLR, which GIS data generated by the NPS Cultural Resources GIS office in Washington, D.C. between 1996 and 1997 was mapped. This data consisted of jurisdictional and Battlefield Park boundaries; natural resources data (such as hydrology and vegetation); roads; parking areas and pull-offs; buildings and structures; monuments, markers, and tablets; and trails. In addition, JMA provided additional GIS data that they had generated as part of their analysis, including landscape conditions during the 1863 battle period. This information, as well as other GIS data collected by DWA, served as the basis for further mapping and illustration of the study areas.

Primary Data Collection

Purpose

At the outset of the study, it was recognized that in order to successfully execute this effort, additional data would be collected to augment existing data and resources. The most important task in the data collection and assessment phase was to comprehensively document and quantify the changes that had occurred since the relocation of US 27. In addition, more data was needed to understand the historical, cultural and natural resources outside the Battlefield Park and to document potential impacts to these resources and connections to resources within the Park. As this could not be accomplished with existing data, new data was collected to:

- Quantify the changes in travel patterns in the study areas.
- Quantify the impact of traffic on the roadway network since the relocation.
- Gain an understanding of the trip types, origins, and destinations in order to calibrate the Chattanooga MPO's travel demand model for existing conditions, thus providing a better forecast of future travel demand.
- Identify historic, natural, and cultural features outside Battlefield Park boundaries, primarily in the gateway corridors that provide ingress and egress to the Battlefield Park.

Data collection methods used to fulfill the needs of the study were traffic counts, a license tag origin and destination survey, a roadside interview survey, and site visits to make photographic and descriptive documentation of cultural and natural resources. Traffic counts were used to determine traffic patterns before and after the US 27 relocation. Counts collected in 2003 will be used to calibrate the base year travel demand model and simulate existing conditions. The license tag surveys and associated mapping helped to determine traffic patterns for vehicles entering and exiting at each of the eight survey sites surrounding the Battlefield Park. The roadside interview surveys provided information to identify the character of trips, such as trip purpose, trip frequency, auto occupancy, mode, Park visitation, and trip origin and destination. The site visits provided information and visual documentation to augment known historical features and attributes, especially in the gateway corridors to the Park. Table 3.2 provides an overview of the traffic and travel data collected.

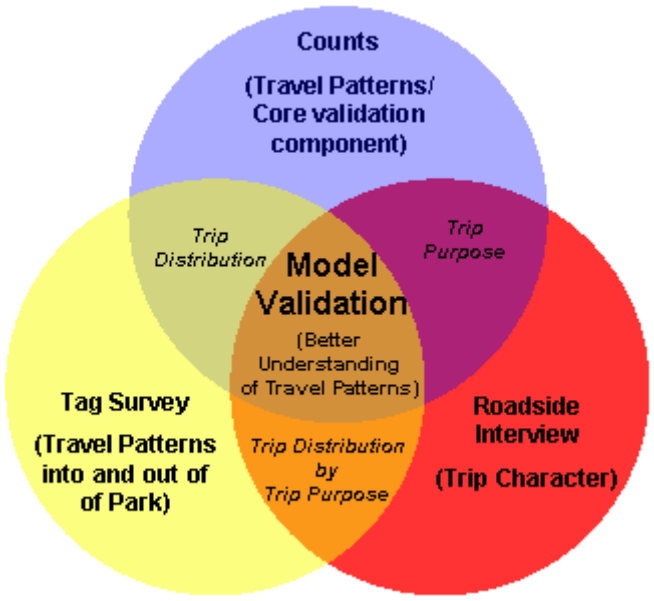
Table 3.2 Overview of Traffic and Travel Data Collection/Survey Information Efforts

Data Collection/ Survey Information	Purpose	Time of Collection	Confidence Level
Traffic Counts	Determine traffic patterns before and after US 27 relocation and used as target for model validation and calibration.	Tuesday, May 13, 2003 12 a.m. to 12 a.m. (24 hours) (before school out)	Good; Logical travel patterns depicted before and after US 27 relocation
License Tag Survey	Determine traffic patterns for vehicles traveling into and through the Park.	Tuesday, May 13, 2003; 7 a.m. to 7 p.m. (12 hours) (before school out)	Good (30% sample size); Logical distribution of Non-Park Trips
Roadside Interview Survey	Identify character of trips (i.e., trip purpose, frequency, origin and destination, auto occupancy, etc.)	Tuesday, July 29, 2003 and Saturday, August 2, 2003; 2 p.m. to 7 p.m. (5 hours) (during peak Park visitation)	Good (17% sample size, 69% response rate); Logical Park v. Non-Park Trips split and trip character data

Correlation between Data Collection and Survey Information Results

All three traffic and travel data collection efforts are integral to the model validation process. As illustrated in Figure 3.1, applying the travel patterns into and out of the Battlefield Park from the license tag survey to the traffic counts provides a better understanding of trip distribution. Applying the trip character information from the roadside interview survey to the traffic counts provides a better understanding of trip purpose. Together, all three components collectively provide a better understanding of travel patterns within the study area. A series of comparisons and analyses were completed among the three data/information components and are discussed in detail in Appendix B (Confidence in Data Collection and Survey Information Results).

Figure 3.1 Integration of Data Collection/Survey Information Results



Methodology

The following describes the methodology used to collect the traffic counts, conduct the license tag and roadside interview surveys, and perform the cultural and historic resources inventory.

Traffic Count Data Collection

To supplement existing traffic count data provided by GDOT and NPS, 24-hour tube counts were collected on Tuesday, May 13, 2003, by Georgia Traffic, Inc. The traffic counts were collected during May in order to capture normal traffic patterns prior to dismissal of school students for the summer. The traffic counts were collected at 13 key locations surrounding and within the Battlefield Park, including along the US 27 relocation. These locations were selected in order to determine the impact of the US 27 relocation by comparing counts before and after the relocation. In addition, they are located at key locations within and surrounding the Park that will be used to calibrate the model. The map included in Appendix B illustrates where traffic counts were collected relative to the location of license tag survey sites and the roadside interview survey.

License Tag Origin and Destination Survey Information

An entry and exit license tag survey was completed at eight sites surrounding the Battlefield Park, creating a cordon line around the Park. These eight sites correspond to eight of the traffic count sites. The survey was conducted between 7 a.m. and 7 p.m. on Tuesday, May 13, 2003,

the same day as the traffic counts. The license tag entry and exit survey was conducted during May in order to capture normal traffic patterns prior to dismissal of school students for the summer. The license tag of each vehicle entering and exiting the Battlefield Park at all eight sites was recorded in 15 minute intervals and then matched within a spreadsheet to identify the travel pattern of vehicles going through gateway locations. The travel distribution of Non-Park trips at each of the eight sites was also evaluated.

The initial results of the license tag survey caused concern with the CCNMP Rangers who thought that the survey overstated the percent of Battlefield Park visitors from the eight survey locations. The interview surveys conducted as a part of the study helped to more clearly identify the number of Park visitors by providing information about trip origin and destination. The license tag survey provided trip distribution patterns in the Battlefield Park. The interviews further refined those patterns with information about trip making, such as destination, frequency, and more. Together, the two surveys were successful in accurately portraying the character of trip making in the Park and surrounding area.

Roadside Interview Survey Information

To supplement the license tag survey, a roadside interview survey was completed at the intersection of LaFayette Road and McFarland Gap Road/Reed's Bridge Road. The survey was conducted between 2 p.m. and 7 p.m. on both Tuesday, July 29, 2003, and Saturday, August 2, 2003, by All Traffic Data, Inc. The roadside interview survey was conducted in July and August during the Battlefield Park's peak visitation period providing for a greater volume of survey participation. Conducting the roadside interview survey on a Tuesday and a Saturday provided trip character data for both a weekday and weekend day. In order to receive approval from the Federal Office of Management and Budget (OMB), the format of the survey was changed from a postcard distribution survey to a roadside interview survey completed on-site. The surveyor at each intersection approach stopped approximately every fifth traveler and asked the potential respondent to participate in the interview. If the potential respondent agreed to participate, the surveyor asked the questions and filled out the interview sheet. Upon completion of the data collection, the data was entered into a database for further analysis.

Confidence in Data Collection and Survey Information Results

Several comparisons were made among the three data/information sources to determine the accuracy of data collected. The results of the comparisons and analyses support the validity of the data/information. The comparisons and analyses conducted are as follows:

- Compared change in traffic counts on key roadways surrounding the Battlefield Park before and after the US 27 relocation to the amount of traffic along the US 27 relocation to determine if the 2003 traffic counts collected were representative of the redirected travel patterns.

- Conducted a cut-line analysis to compare collected traffic counts before and after the US 27 relocation using counts provided by GDOT and NPS. A cut-line analysis provides a means to

compare either north-south or east-west movement changes crossing a designated line on a map (see Appendix B).

- Compared collected traffic counts to roadside interview survey estimated counts at LaFayette Road intersection with McFarland Gap Road/Reed's Bridge Road.

- Reviewed the distribution of trips between tag survey locations to ensure logical results based on area traffic counts and the roadway network within and immediately surrounding the Battlefield Park.

- Compared LaFayette Road trip distribution between collected traffic counts, roadside interview survey, and license tag survey.

- Compared average daily Battlefield Park trips from roadside interview survey to NPS Park visitation data.

- Compared Battlefield Park v. Non-Park trips from roadside interview survey by survey day.

Documentation for the confidence level analyses is included in Appendix B.

Utilization of Traffic and Travel Data and Information

All three traffic and travel data components are integral to the model validation process. It is recommended that the distribution of Non-Park trips to and from each tag survey site be utilized from the license tag survey, while the split of Battlefield Park versus Non-Park trips be utilized from the roadside interview survey.

Traffic Count Data Collection

The 2003 traffic counts will be used to validate the base year model and simulate existing conditions. In addition, the traffic counts before and after the US 27 relocation will be used to determine the impact of the US 27 relocation on area traffic patterns.

License Tag Entry and Exit Survey Information

The license tag entry and exit survey results will be used to determine traffic patterns for vehicles traveling into and through the Battlefield Park, including the distribution of Non-Park trips going to and from each tag station surrounding the Park. Entry and exit travel patterns are also being evaluated as part of the roadside interview survey. However, the roadside interview data only provides origin and destination data for the one subject intersection, not all eight tag survey sites. It should be noted that the roadside interview data will only provide origin and destination data by zip code, city, and state. In order to receive OMB approval, street address information was removed from the original roadside interview survey instrument. Maps indicating the

distribution of trips for each tag site have been generated and are included in Appendix B of this report.

Roadside Interview Survey Information

The roadside interview survey results will be used for information on trip character, such as trip purpose, trip frequency, auto occupancy, mode, Battlefield Park visitation, and trip origin and destination at the subject intersection. The percentage split of Park trips v. Non-Park trips (17 percent Park trips v. 83 percent Non-Park trips) is included.

Cultural and Natural Resource Inventory

Besides collecting traffic and travel data, additional data collection on cultural and natural resources outside of the Battlefield Park's boundary, with a focus on selected road corridors, is underway. This task entails photographic documentation of representative features and characteristics of primary (gateway) road corridors within the Transportation Impact Study area, as well as identification of cultural/natural/recreational resources found within those corridors. Primary road corridors are defined as those providing primary visitor access to the Battlefield Park and include LaFayette Road (north) between Battlefield Parkway (SR 2) and the Park boundary, LaFayette Road (south) between US 27 and the Park boundary, McFarland Gap Road between the Mission Ridge Road intersection and the Park boundary, and Reed's Bridge Road between Chickamauga Creek and the Park boundary. This documentation also includes a review of comprehensive plans and related planning documents to determine how future land use may affect these corridors and the remaining rural roads providing access into the Park. This work is anticipated to be completed by the end of September 2003.

Natural and cultural resource data within the subarea was documented in accordance with the guidance offered in *A Guide to Cultural Landscape Reports: Content, Process, and Techniques*, and National Register Bulletin 40: *Guidelines for Identifying, Evaluating, and Registering America's Historic Battlefields.* The following major studies were also consulted: *Chickamauga and Chattanooga Historic Resource Study*, *Chickamauga and Chattanooga Cultural Landscape Inventory, An Archeological Overview and Assessment of Chickamauga and Chattanooga National Military Park, Administrative History of Chickamauga and Chattanooga National Military Park, Vegetation Communities of Chickamauga Battlefield,* and the *List of Classified Structures* for Chickamauga Battlefield.

A site visit to document existing conditions was performed in December 2002. Chickamauga Battlefield Historian Jim Ogden and Resource Manager Jim Szyjkowski provided the research team with a windshield tour of the Battlefield Park during this time. Existing conditions base maps, derived from electronic mapping files from the NPS Cultural Resources GIS Office, were field checked during the site visit. Additions, deletions, and other corrections to the base information were noted in the field, as was the character of the primary landscape features inventoried. Photographic documentation of existing conditions was completed at this time.

Cultural and natural resources within the gateway road corridors outside the Battlefield Park have been identified using available secondary sources, including historical and natural survey data, as well as the planning documents collected by the study team. Research efforts regarding documentation of local, state, and National Register historic sites are limited to collection of materials from the Park archives and repositories proximate the Park, and supplemented by on-line database searches from the National Register and Georgia State Historic Preservation Office (SHPO). Photographic documentation of gateway road corridors was completed in September 2003.

4 Presentation of Baseline Conditions

Section 3 presented the purpose and methodology of collecting the various types of data required for this study. This section presents the background information and baseline conditions on which the remaining tasks will be built. The data will be presented in the following sequence: study area, demographics, traffic and travel patterns, cultural and historic resources, and finally planned projects within the study area.

Study Area

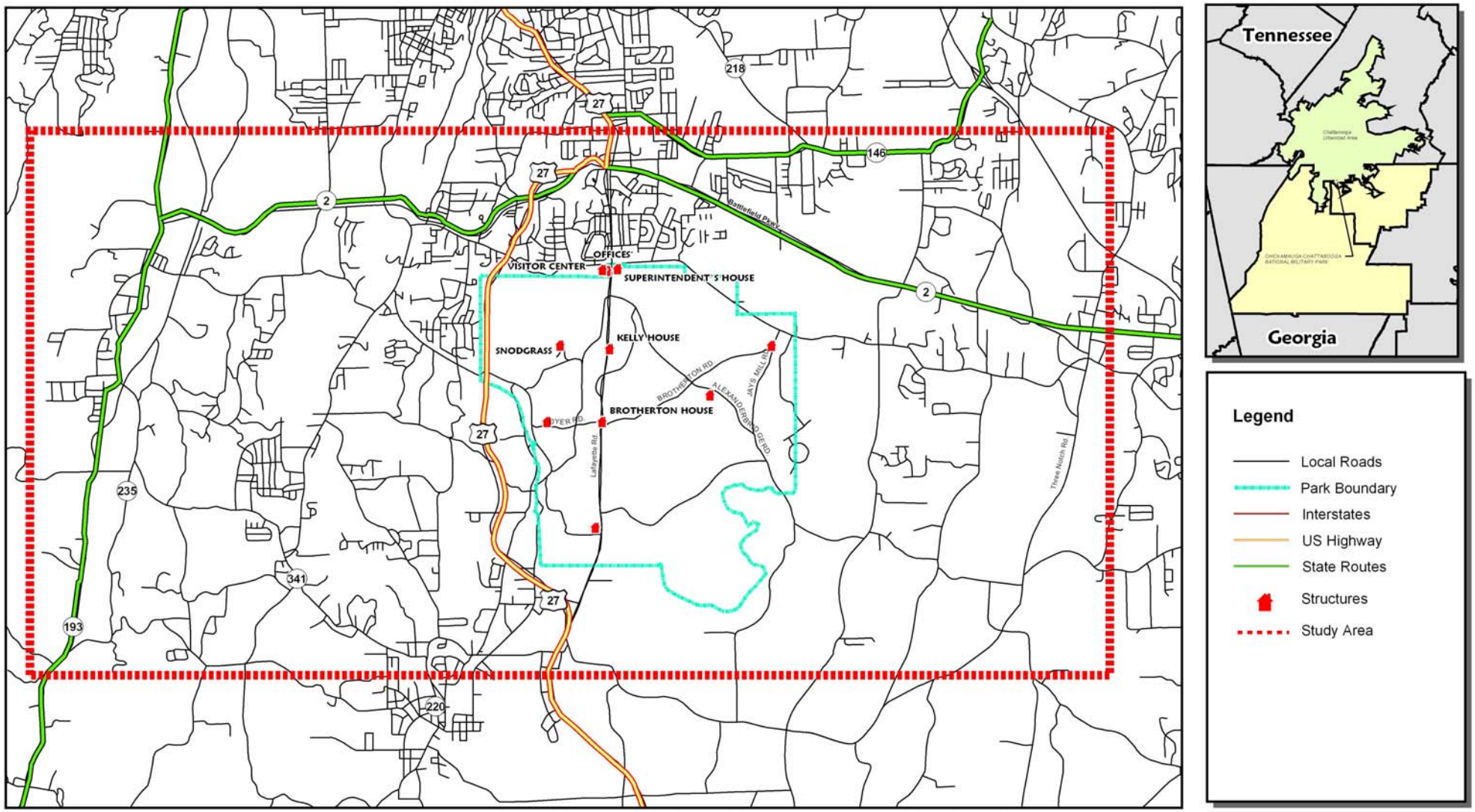
The study area consists of two parts: the larger Traffic Impact Study area, which is generally bounded by State Route 146 on the north, Three Notch Road on the east, the City of Chickamauga on the south, and State Route 193 on the west; and the smaller Subarea Transportation Plan area, which consists of the Chickamauga Battlefield Unit of the Chickamauga and Chattanooga National Military Park. The Traffic Impact Study area includes portions of western Walker County and eastern Catoosa County, as well as portions of the City of Fort Oglethorpe. It covers an area of approximately 58 square miles. Portions of the study area are also crossed by the 2000 Census Chattanooga, Tennessee urbanized area boundaries. The subarea is wholly within the Chickamauga Battlefield Unit of Chickamauga and Chattanooga National Military Park. The Battlefield Unit covers an area of 5,280 acres or approximately 8.25 square miles. The greater study area is shown in Figure 4.1.

The design of this study with its two components means that there are unique issues to be addressed in each of the two studies. While each component is considered separately, it is recognized that any actions taken within one area will have an impact on the other, so the overall study must evaluate the areas concurrently.

Demographic Overview

The study area lies within Walker and Catoosa Counties. The 2000 U.S. Census population of Walker County was 61,053, and the population in Catoosa County was 51,356. Both counties have experienced growth of varying degrees. Since 1960 Catoosa County has experienced growth exceeding 15 percent per decade, increasing in population from 21,101 in 1960 to its current population, adding an average of 8,000 new persons per decade. Walker County has grown from 45,264 in 1960 to its current population, adding an average of 3,900 persons per decade. In the Georgia Rural Development Council's *State of Rural Georgia* report, Georgia counties were grouped into Economic Vitality Index categories. Catoosa County was considered a "Developing" county while Walker County received an "Existing and Emerging Growth Center" designation.

Figure 4.1 Study Area



Population within the study area based on grouping Census blocks approximating the study area boundaries shows an approximate population of 36,149, which is roughly one-third of the total population of the two counties combined. Table 4.1 summarizes basic demographic data for the study area. The general characteristics of the study area population reflect those of the greater area population.

Table 4.1 Demographic Profile

Geography	2000 Population	2000 Race/Ethnicity						Age	
		White		Black		Hispanic		65+	
		No.	%	No.	%	No.	%	No.	%
Chattanooga MSA, GA Part	129,489	123,784	96%	3,075	2%	1,323	1%	16,581	13%
Walker County	61,053	57,652	94%	2,310	4%	565	1%	8,439	14%
Catoosa County	53,282	51,356	96%	669	1%	621	1%	6,322	12%
Ft. Oglethorpe	6,940	6,464	93%	165	2%	98	1%	1,361	20%
Study Area*	**36,149**	**34,413**	**95%**	**950**	**3%**	**309**	**1%**	**4,991**	**14%**

**The study area calculation is an approximation based on a grouping of 767 contiguous Census blocks within the study area.*

Traffic and Travel Patterns

Existing and Future Traffic Volumes

The traffic volumes within the study area have changed since the rerouting of US 27 to the Battlefield Park's western boundary. Figure 4.2 shows historic weekday traffic volumes collected from existing sources, as well as volumes collected in May 2003 for this study. Study area roadways with the greatest daily traffic volumes are State Route 2 (Battlefield Parkway), US 27, State Route 146, McFarland Avenue, and Three Notch Road. Figure 4.3, which illustrates shows the 2025 network from the Chattanooga MINUTP travel demand model, shows volumes on the primary roadways continuing to grow. The model indicates traffic being diverted to alternate routes, such as Alexander Bridge Road through the Park. It also shows an overall increase in volumes on the north-south roads north of SR 2 leading into Chattanooga.

Figure 4.2 Existing Weekday Traffic Volumes

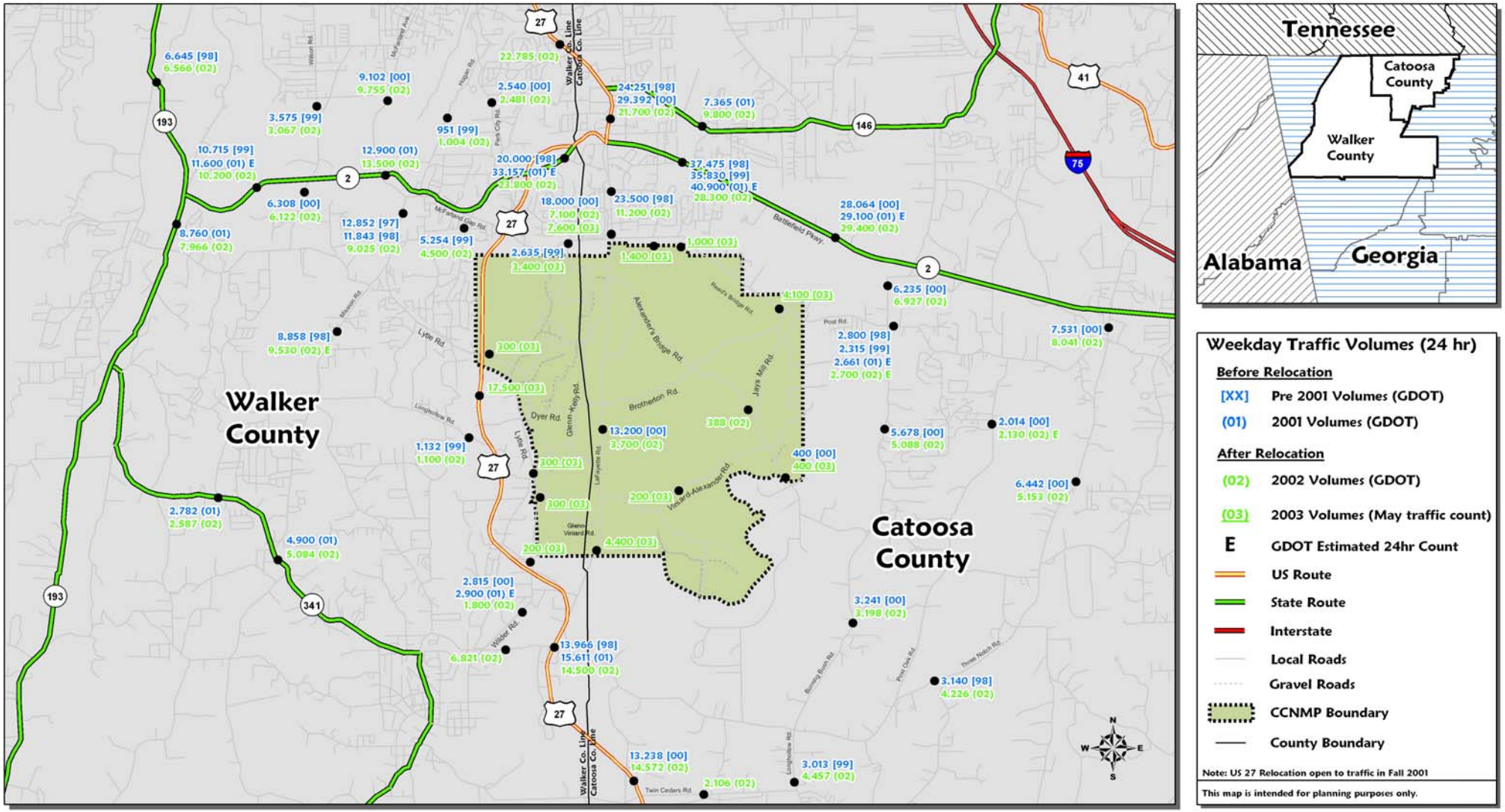
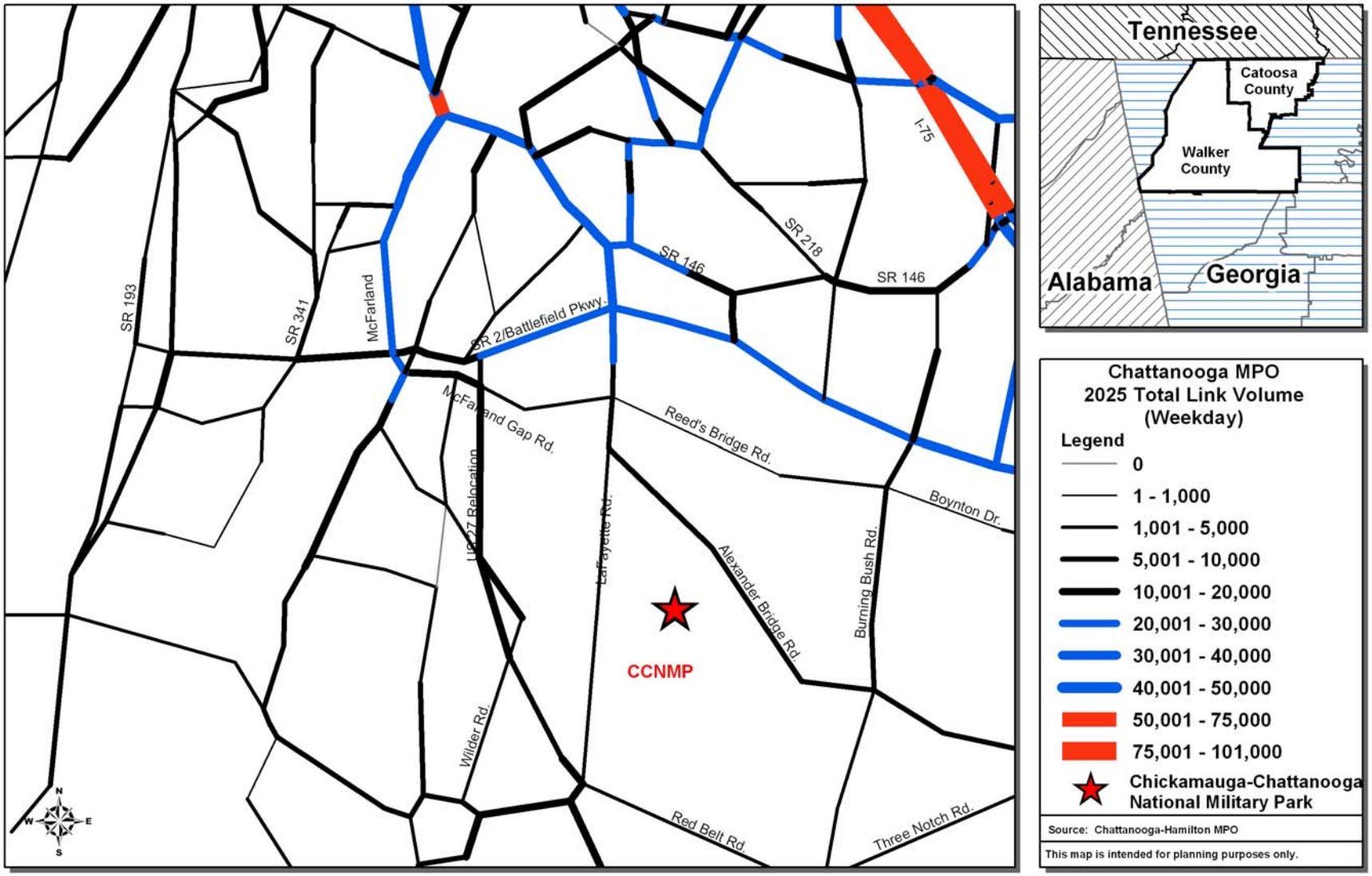


Figure 4.3 Projected Traffic Volumes – 2025 Chattanooga Travel Demand Model



Road Classification

Figure 4.4 shows the road classifications for study area roads from the Georgia RC file database. Table 4.2 lists major roads within the study area. All roads within the Chickamauga Battlefield boundary are federally-owned Park roads and follow NPS functional classification guidelines, which differ from GDOT's functional classification system.

Table 4.2 Major Study Area Roads

GDOT Functional Classification		
Interstate	**Arterials**	**Collectors**
I-75	Cross Street (Catoosa)	Burning Bush Road (Catoosa)
	Dietz Road (Catoosa)	Burnt Mill Road (Walker)
	Lakeview Drive (Catoosa)	Crest Ridge Drive (Walker)
	LaFayette Road (Ft. Oglethorpe)	Dry Valley Road (Walker)
	Lee & Gordon Mill Road (Walker)	Forrest Road (Ft. Oglethorpe)
	McFarland Gap Road (Walker)	Hogan Road (Walker)
	McFarland Road (Walker)	Jenkins Rd. (Walker)
	Mission Road (Walker)	Johnson Road (Walker)
	Post Road (Catoosa)	Longhollow Road (Walker)
	Reed's Bridge Road (Catoosa)	Mack Smith Road (Catoosa)
	Salem Road (Walker)	Park City Road (Walker)
	SR 146/Cloud Springs Road (State Route)	Pine Street (Walker)
	SR 2/Battlfield Parkway (State Route)	Poplar Springs Road (Catoosa)
	Five Points Road (Walker)	Post Oak Road (Catoosa)
	SR 341 (State Route)	Red Belt Road (Catoosa)
	Three Notch Road (Catoosa)	Schmitt Road (Walker)
	US 27/SR 1 (State Route)	SR 193 (State Route)
		SR 349 (State Route)
		Thomas Road (Ft. Oglethorpe)
		W. Gardon Rd. (Walker)
		W. Valley Dr. (Walker)
		Wilder Road (Walker)

Journey to Work

Increasing growth and development impacts on the study area roadways can be seen by looking at the increase of the Chattanooga urbanized area boundaries and evaluation of the journey to work data from the U.S. Census. Figure 4.5 shows the change in the Chattanooga urbanized area boundaries between 1990 and 2000.

The study area lies within Walker and Catoosa Counties. Journey to work data is unavailable at the Census block level, but by looking at Walker and Catoosa County aggregate data, one can

Figure 4.4 Roadway Functional Classification

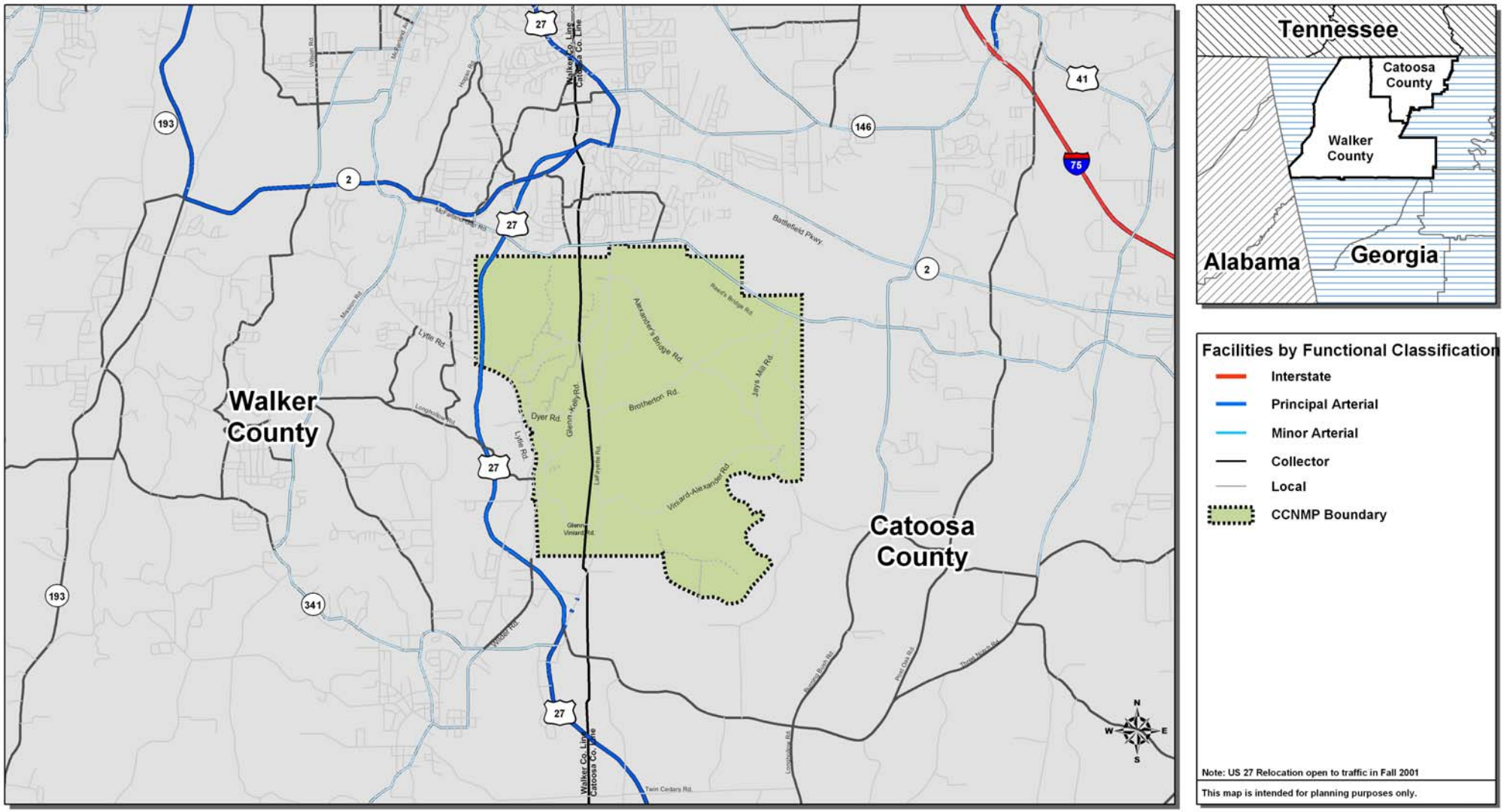
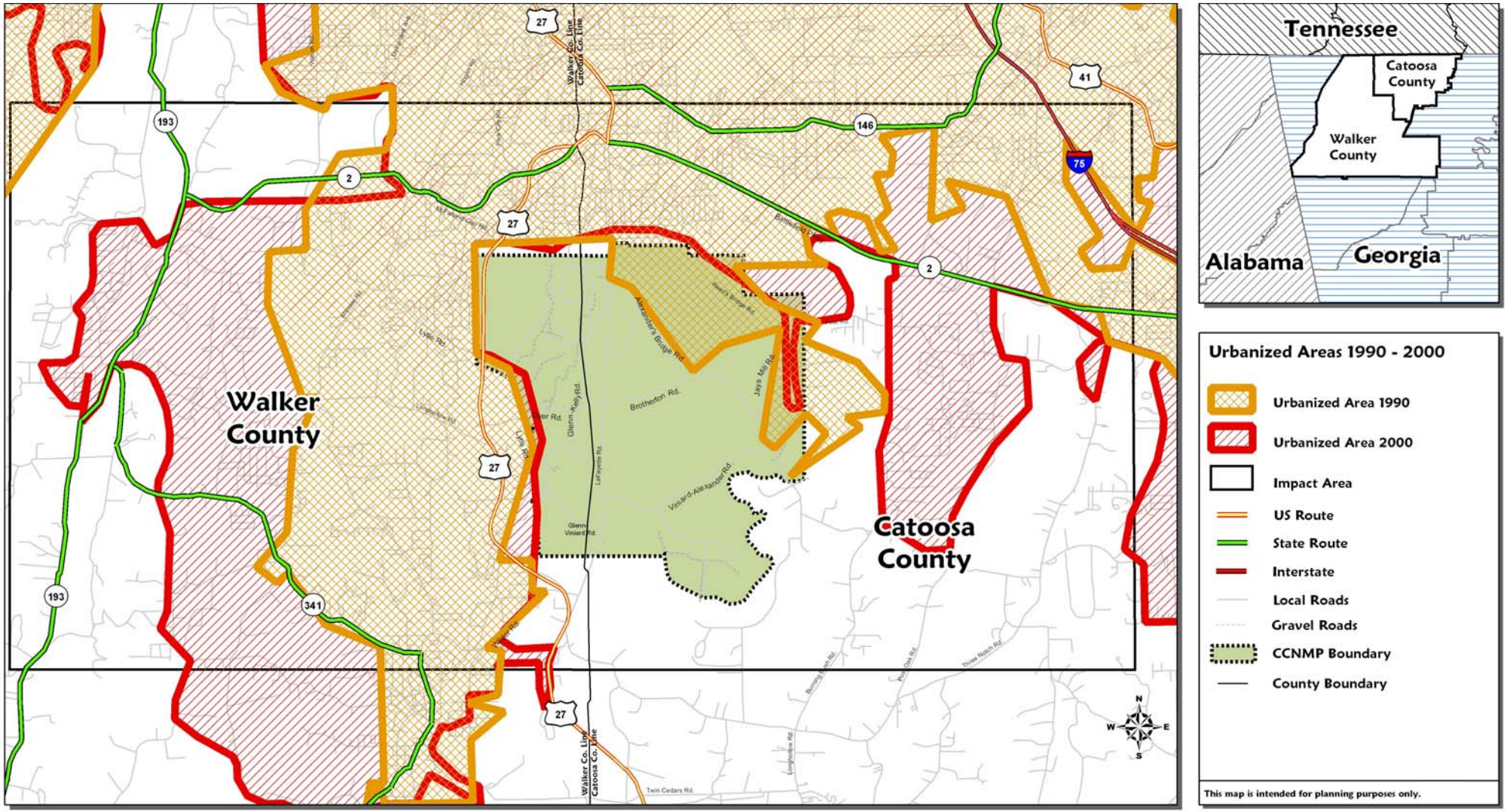


Figure 4.5 Chattanooga Urbanized Area



gain an understanding of general commuting patterns in and around the study area. Chattanooga-Hamilton County, Tennessee, is an employment attraction for Catoosa and Walker County residents. A greater share of Catoosa County residents leave Catoosa County to work in Hamilton County, TN, (12,320 or 46 percent in 2000) than work in Catoosa County (7,167 or 27 percent in 2000). The share of employment captured by the Chattanooga-Hamilton County area has increased in the study area counties between 1990 and 2000. The greatest increase occurred in Catoosa County where the number of workers who commuted from Catoosa County to Hamilton County increased from 8,786 in 1990 to 12,320 in 2000, an increase of 40 percent. Walker County residents commuting to Hamilton County also increased from 8,657 in 1990 to 9,098 in 2000, a five percent increase.

There is a fair amount of cross commuting between Catoosa and Walker Counties. Out of the 13,255 working in Catoosa County in 2000, 7,167 (54 percent) live in Catoosa County and 2,795 (21 percent) live in Walker County. Out of the 17,823 persons working in Walker County in 2000, 11,244 (63 percent) live in Walker County and 1,937 (11 percent) live in Catoosa County. Please see Appendix C for a tabular summary of Catoosa and Walker County journey to work data.

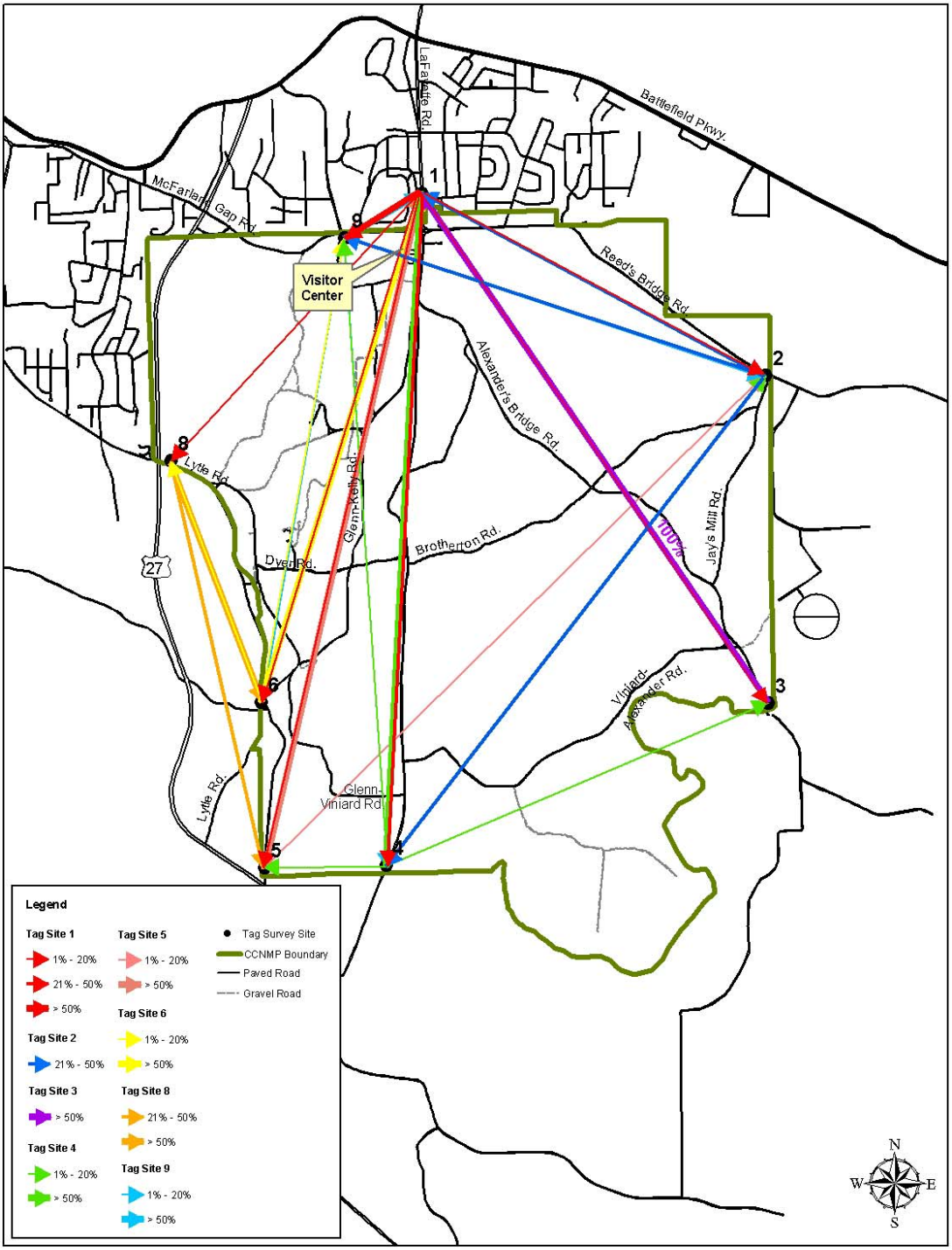
Travel Patterns: License Tag Origin and Destination Survey

The license tag origin and destination survey was used to determine the origin and destination of vehicles traveling through each of the eight tag survey sites. Maps providing the percentage of vehicles going to each tag survey site from their respective origin site are included in Appendix D of this document. Figure 4.6 shows distribution arrows by bandwidth (the thicker the bandwidth, the higher the percentage) for all eight tag sites on one map.

Roadside Interview Survey

The roadside interview survey provided detailed information on the trip character of persons traveling through the LaFayette Road intersection with McFarland Gap Road/Reed's Bridge Road. This includes determining which travelers were visiting the Battlefield Park (Park trips) versus those that were traveling through the Park (Non-Park trips). In addition, the roadside interview survey provided a wealth of information on trip frequency, auto occupancy, trip purpose, origin and destination by state, city, and zip code, Park site visitation, Park trip duration, and transportation mode in and outside the Park. The results from the roadside interview survey were entered into an Access database where several queries were performed. Where appropriate, results from the queries are divided by Park v. Non-Park trips. The roadside survey documentation is included in Appendix E.

Figure 4.6 Percent of Non-Park (External-External) Trips Going through Each Tag Survey Site - All Tag Site Locations



Results Based on Total Respondents (Park and Non-Park Trips)

The following analyses were completed based on the total amount of respondents that completed the interview (both Park and Non-Park trips):

- Park trips v. Non-Park trips
- Trip Frequency (Total trips)
- Auto Occupancy (Park v. Non-Park trips)
- Trip Purpose (Total trips)
- Trips with Either an Origin and/or Destination by State (Park v. Non-Park trips)
- Trips with Either an Origin and/or Destination by City (Park v. Non-Park trips)
- Trips with Either an Origin and/or Destination by Zip Code (Park v. Non-Park trips)

Park Trips versus Non-Park Trips

A cut-line analysis, conducted to validate the survey results, demonstrated the benefit of relocating US 27 west of the Battlefield Park boundary resulting in the redirection of traffic through the Park along LaFayette Road to around the Park via the US 27 relocation. The roadside interview survey determined the percentage of vehicles still traveling through the Park without stopping to visit the Park at approximately 83 percent. As shown in Table 4.3, approximately 17 percent of the total respondents that participated in the roadside interview survey stated that they were either coming or going to the Park. The results were the same for both days surveyed.

Table 4.3 Park v. Non-Park Trips by Survey Date

Date	Park Trips		Non-Park Trips		Total Participated	
	Number	Percent	Number	Percent	Number	Percent
Tuesday, July 29, 2003	50	17%	242	83%	292	100%
Saturday, August, 2, 2003	53	17%	252	83%	305	100%
Total	**103**	**17%**	**494**	**83%**	**597**	**100%**

Table 4.4 demonstrates the split of Park v. Non-Park Trips by intersection approach. Almost half of the Park Trips are made up of travelers at the northbound approach of the LaFayette Road and McFarland Gap Road/Reed's Bridge Road intersection.

Table 4.4 Park v. Non-Park Trips by Intersection Approach

Approach	Park Trips		Non-Park Trips		Total Participated	
	Number	Percent	Number	Percent	Number	Percent
Northbound	47	27%	129	73%	176	100%
Westbound	9	9%	90	91%	99	100%
Southbound	31	17%	149	83%	180	100%
Eastbound	16	11%	126	89%	142	100%
Total	**103**	**17%**	**494**	**83%**	**597**	**100%**

Trip Frequency

In the roadside interview survey, trip frequency was defined as the number of times per week that the survey respondent estimated they travel through the subject intersection. Approximately 26 percent of those who responded to the survey stated they travel through the intersection less than one day a week on average. As shown in Figure 4.7, almost half of those interviewed responded that they travel through the intersection five days a week, indicating that they are most likely traveling to and from work. This is further supported by Figure 4.8, demonstrating that 61 percent of those interviewed do not travel through the intersection on the weekend.

Figure 4.7 Average Number of Weekdays Respondents Travel Through Intersection

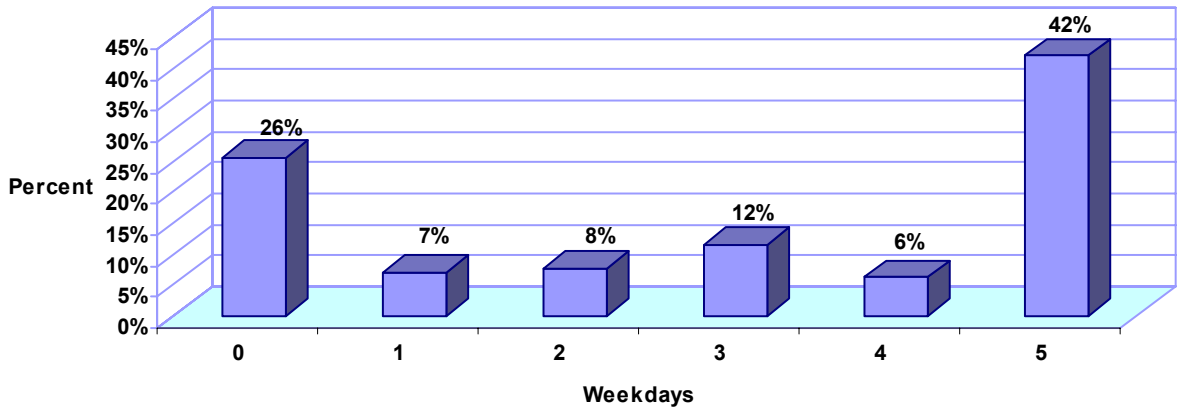
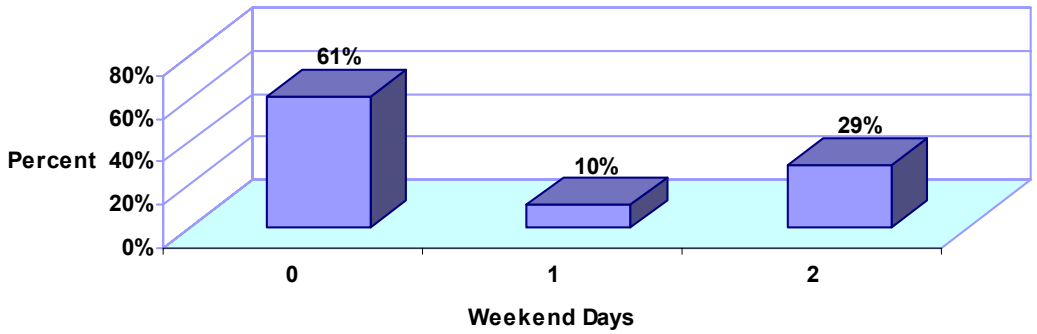


Figure 4.8 Average Number of Weekend Days Respondents Travel Through Intersection



Auto Occupancy

Auto occupancy is defined as the number persons within each vehicle. As shown in Table 4.5, the overall average auto occupancy for all of the survey respondents (both Park and Non-Park trips) is approximately 1.86 persons per vehicle (ppv). The average auto occupancy for Park trips only is approximately 2.33 ppv, compared to NPS's assumption of approximately 2.7 persons per recreation vehicle visiting the Battlefield Park. The difference can be attributed to vehicle classification, as the 2.33 ppv from the roadside interview survey is based on all Park trip vehicles, whereas the NPS ppv is based on recreation vehicles only visiting the Park. Non-Park trips have a lower average auto occupancy rate of 1.76 ppv since they are traveling through the Park and are most likely commuting.

Table 4.5 Average Auto Occupancy by Type of Trip

Trip	PPV
Park Trips	2.33
Non-Park Trips	1.76
All Trips	**1.86**

As shown in Table 4.6, almost half of those respondents that participated in the interview had only one person per vehicle. This is expected since most of the trips at the intersection are those traveling through the Battlefield Park.

Table 4.6 Distribution of Auto Occupancy

Auto Occupancy	Participated		Refused		Previously Contacted*		Total Surveys	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
1	281	47%	119	47%	7	39%	407	47%
2	200	34%	88	35%	6	33%	294	34%
3	58	10%	35	14%	4	22%	97	11%
4	36	6%	9	4%	0	0%	45	5%
5	14	2%	1	0%	0	0%	15	2%
6 or more	7	1%	2	1%	1	6%	10	1%
Total	**597**	**100%**	**254**	**100%**	**18**	**100%**	**868**	**100%**

* Note: "Previously Contacted" are those travelers who were stopped more than once to participate in the survey. To avoid duplication, these travelers were interviewed only one time.

Trip Purpose

Trip purpose is defined as the purpose for making a trip, such as traveling to work, home, school or other destinations. Seven purposes were included in the roadside interview: home, hotel or motel, work, school, shopping, recreation, and other. The Chattanooga MPO travel demand model includes the following trip purposes: home-based work (HBW), home-based other (HBO), and non-home-based (NHB). Home-based trip purposes include any trips that begin or end at the home. All other trips are considered non-home-based. Table 4.7 is an equivalency table which identifies which trip purposes included in the roadside interview survey equate to the trip purposes included in the travel demand model.

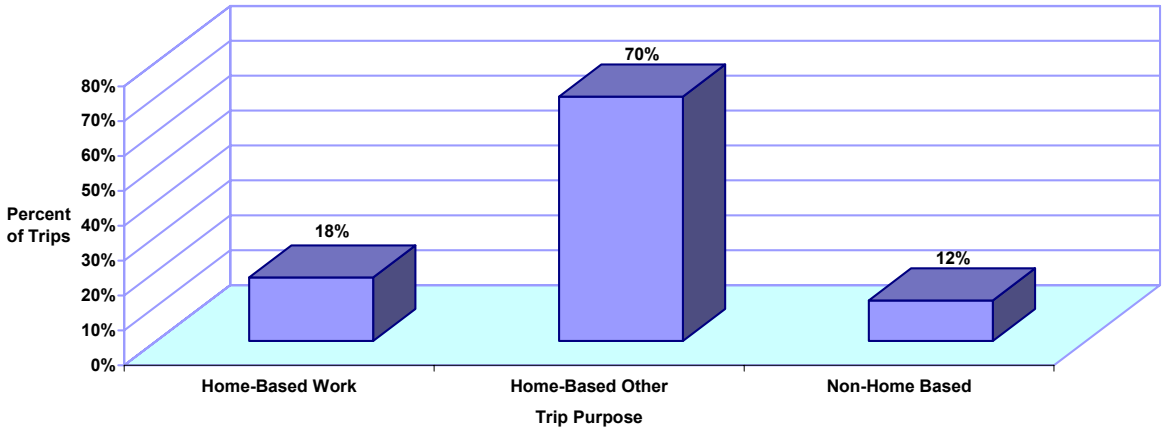
Table 4.7 Trip Purpose Equivalency

Trip Purpose		
Roadside Interview Survey		Chattanooga Travel Demand Model
Origin	**Destination**	
Home	Work	HBW
	All other purposes	HBO
Hotel or Motel	Home	HBO
	All other purposes	NHB
Work	Home	HBW
	All other purposes	NHB
School	Home	HBO
	All other purposes	NHB
Shopping	Home	HBO
	All other purposes	NHB
Recreation	Home	HBO
	All other purposes	NHB
Other	Home	HBO
	All other purposes	NHB

Notes: HBW = Home-Based Work, HBO = Home-Based Other, NHB = Non-Home-Based

As illustrated in Figure 4.9, most of the total trips (approximately 70 percent) are home-based other (HBO) trips, indicating that most people traveling through the intersection are local to the area. Approximately 18 percent of the total trips (both Park and Non-Park trips) are home-based work, representing those people traveling to or from work.

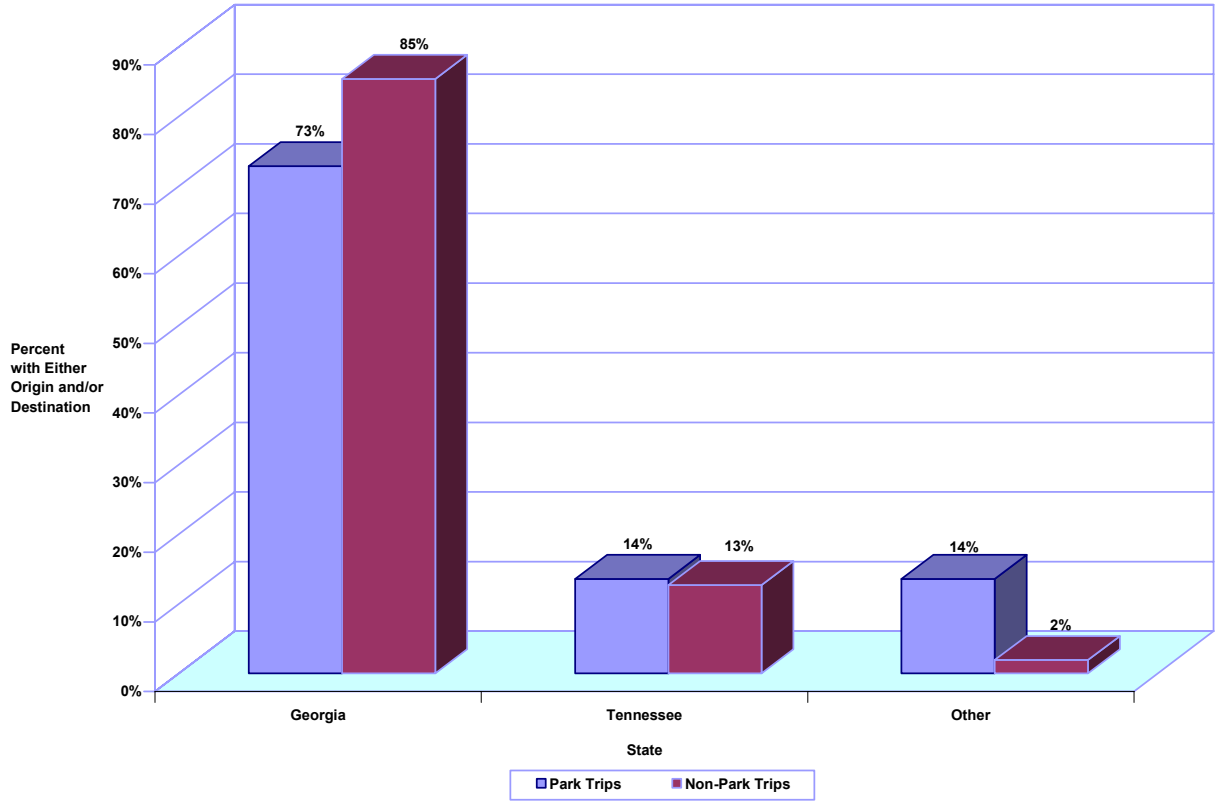
Figure 4.9 Percent of Total Trips by Trip Purpose



Trips with Either an Origin and/or Destination by State

The origin of a trip is defined as where the traveler is coming from, while the destination is where the traveler was going to. The origin and destination of trips in the study area assist the consultant team in better understanding the travel patterns within and immediately surrounding the Battlefield Park. To receive OMB approval, the origin and destination street addresses were removed from the roadside interview survey instrument. However, the city, state, and zip code was obtained from survey respondents. Figure 4.10 illustrates the percent of Park Trips and Non-Park Trips with either an origin and/or destination within each state on the survey instrument.

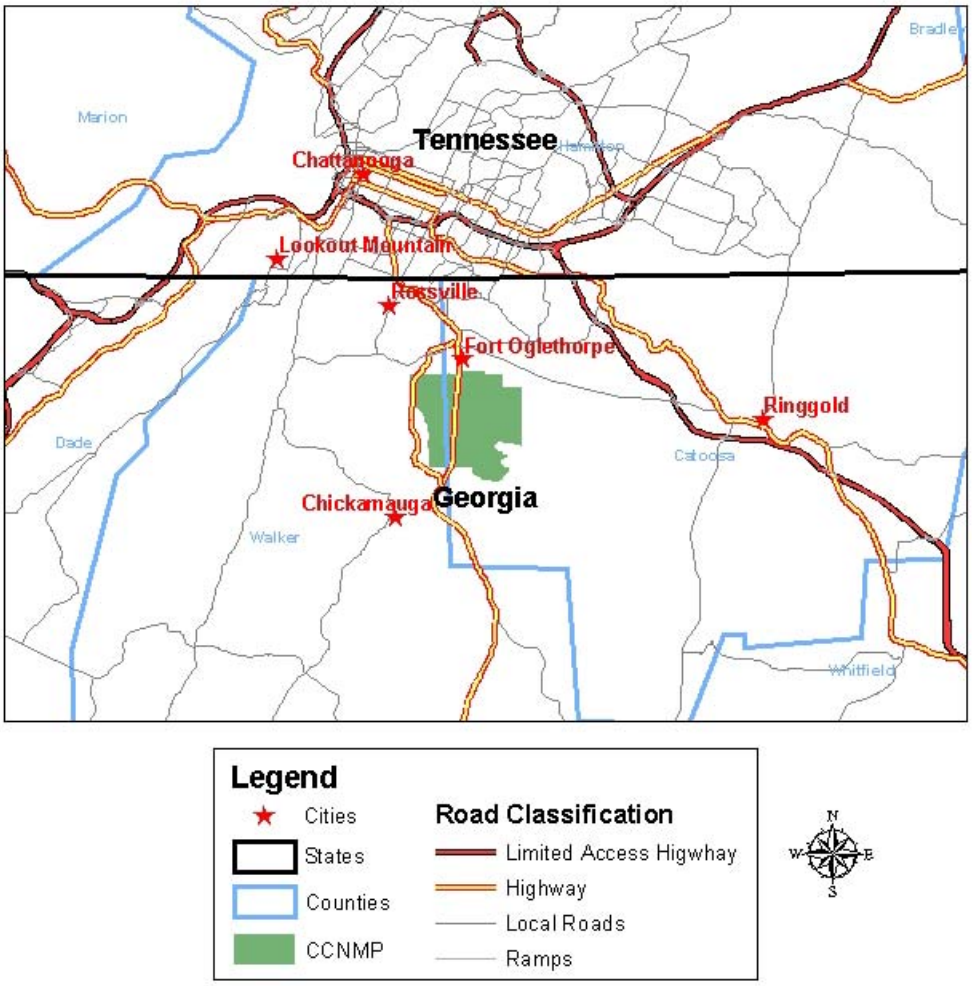
Figure 4.10 Percent of Park Trips and Non-Park Trips with Either an Origin and/or Destination by State



Trips with Either an Origin and/or Destination by City

Seven cities (including an Other category) and the Park were included in the roadside interview: Ft. Oglethorpe, Ringgold, Chickamauga, Rossville, Lookout Mountain, Chattanooga, and Other. Figure 4.11 illustrates the locations of these cities.

Figure 4.11 Cities Listed on Survey Near Park



Based on the results of the roadside interview survey, the following list includes the top five cities for Battlefield Park trips with either an origin and/or destination:

1. Fort Oglethorpe (39 percent of Park trips)
2. Other Cities (24 percent of Park trips)
3. Chattanooga (13 percent of Park trips)
4. Chickamauga (9 percent of Park trips)
5. Rossville and Ringgold (7 percent of Park trips)

The following list includes the top five cities for Non-Park trips with either an origin and/or destination:

1. Fort Oglethorpe (31% of Non-Park trips)
2. Other Cities (22% of Non-Park trips)
3. Chickamauga (14% of Non-Park trips)
4. Rossville (13% of Non-Park trips)
5. Ringgold (12% of Non-Park trips)

Trips with Either an Origin and/or Destination by Zip Code

Figure 4.12 illustrates zip codes within the region that included either an origin and/or destination trip end for either Park or Non-Park Trips.

Figure 4.12 Zip Codes with either an Origin or Destination Trip End (Includes both Park and Non-Park Trips)

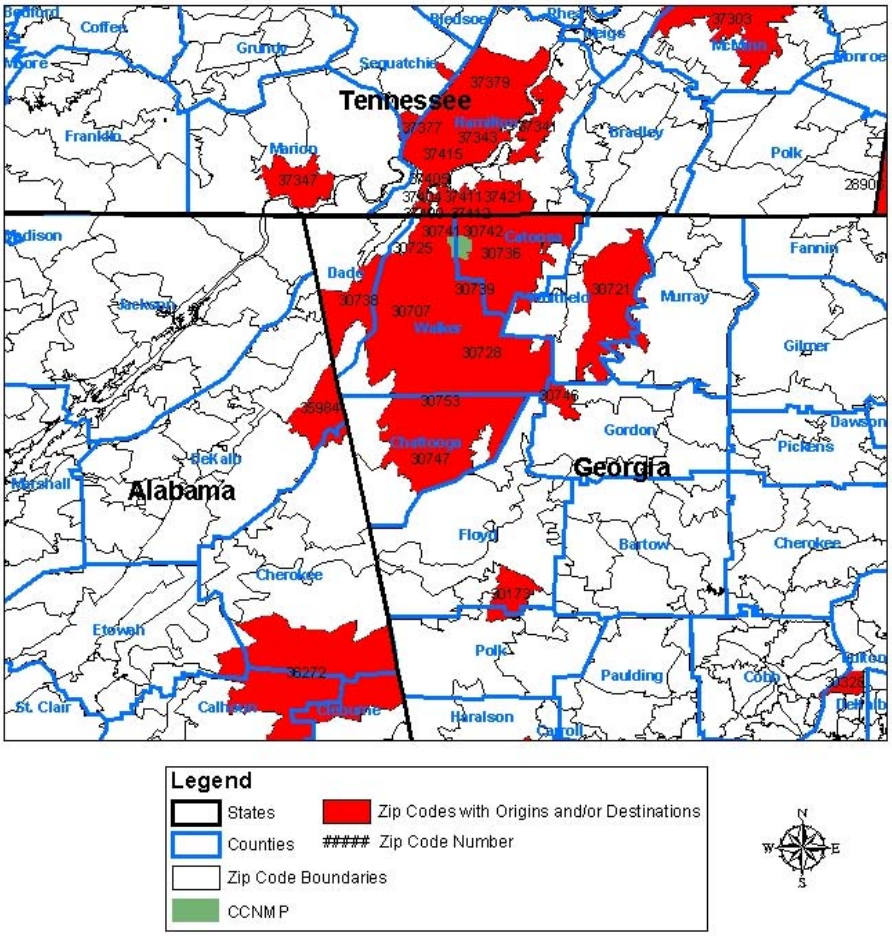


Figure 4.13 illustrates the number of Battlefield Park trip ends (either an origin and/or destination) within each zip code in the region. Most of the Park trip ends either begin or end within zip code 30707 in Chickamauga, Georgia, adjacent to the Battlefield Park.

Figure 4.13 Zip Codes by Number of Park Trip Ends (Either an Origin and/or Destination)

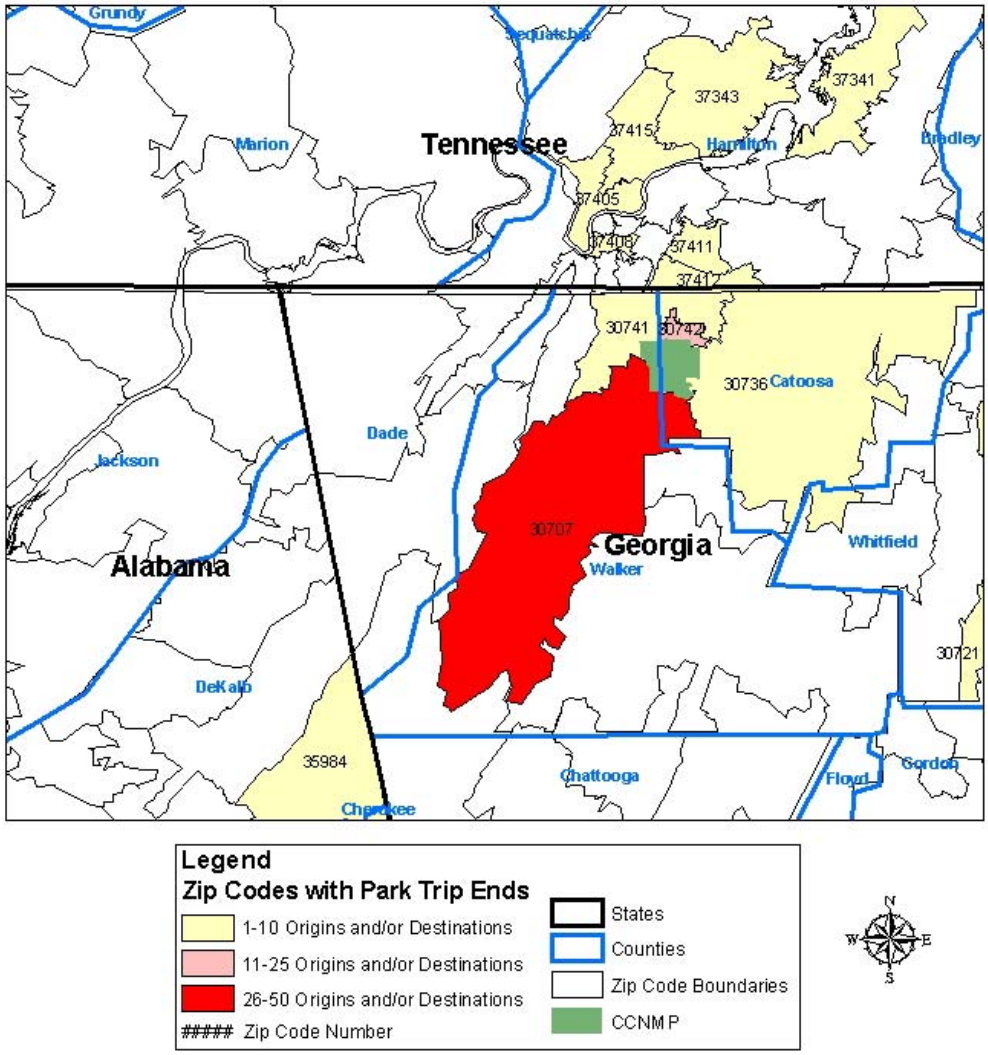
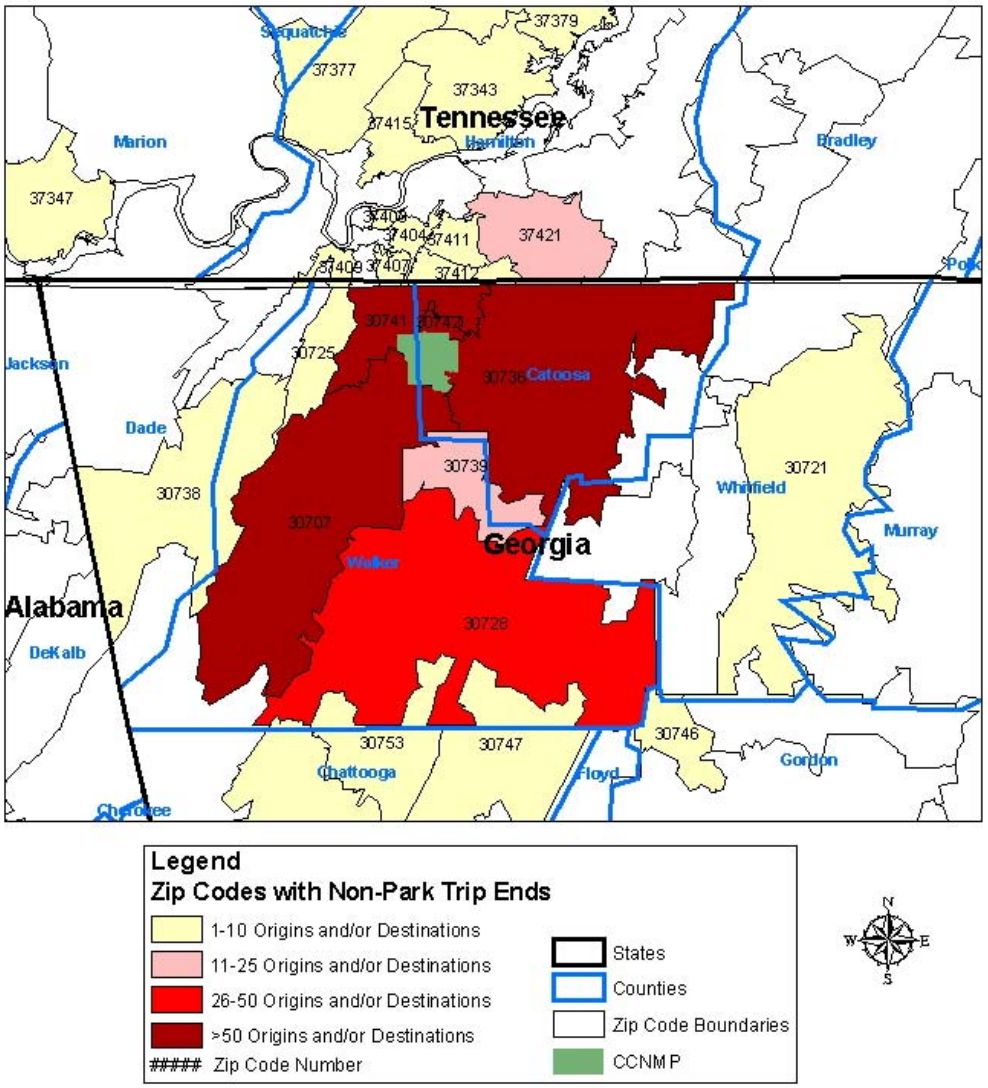


Figure 4.14 illustrates the number of Non-Park trip ends (either an origin and/or destination) within each zip code in the region. Most of the Non-Park trip ends take place in zip code 30742 in Fort Oglethorpe, Georgia (132 trip ends), zip code 30741 in Rossville, Georgia (124 trip ends), zip code 30736 in Ringgold, Georgia (96 trip ends), and zip code 30707 in Chickamauga, Georgia (86 trip ends). All of these zip codes are adjacent to the Battlefield Park.

Figure 4.14 Zip Codes by Number of Non-Park Trip Ends (Either an Origin and/or Destination)



Results Based on Battlefield Park Trips Only

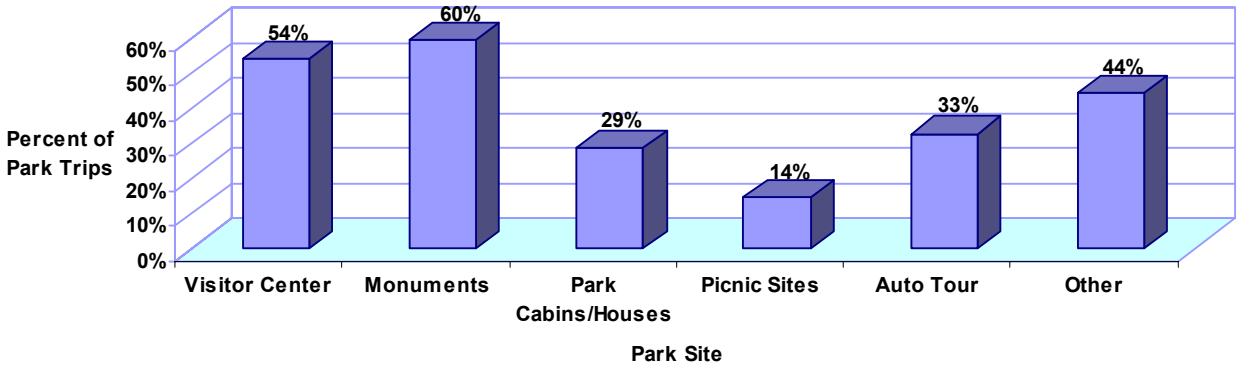
The following data are based only on those respondents that visited the Battlefield Park and include both survey days (Tuesday and Saturday):

- Park Sites Visited
- Auto Tour
- Park Trip Duration
- Mode Inside Park
- Auto Occupancy

Park Sites Visited

The following six categories were provided when asked where the Battlefield Park visitors were going within the Park: Park Visitor Center, monuments, Park cabins/houses, picnic sites, auto tour, and other. As illustrated in Figure 4.15, approximately 54 percent of Park trips visited the Visitor Center. Please note that the percentages included in Figure 4.15 will not add up to 100 percent, as most Park visitors visited more than one Park site.

Figure 4.15 Percent of Park Trips Visiting Park Sites



Auto Tour

The Battlefield Park provides an auto tour for Park visitors. When asked if they took the auto tour, approximately 38 percent (average of Tuesday and Saturday surveys) stated they took the auto tour, as shown in Table 4.8.

Table 4.8 Auto Tour

Auto Tour	Tuesday		Saturday		Total Park Interviewees	
	Number	Percent	Number	Percent	Number	Percent
Yes	17	33%	22	42%	39	38%
No	34	67%	31	58%	65	63%
Total	**51**	**100%**	**53**	**100%**	**104**	**100%**

Note: Total Park Interviewees = Respondents that visited the Park.

Park Trip Duration

Park trip duration is defined as the number of hours each survey respondent estimated they stayed at the Park. As shown in Table 4.9, over half of the survey respondents said they stayed at the Park between one and three hours.

Table 4.9 Park Trip Duration

Duration of Stay in Park	Tuesday		Saturday		Total Park Interviewees	
	Number	Percent	Number	Percent	Number	Percent
Less than 1 hour	14	27%	17	32%	31	30%
1 to 3 hours	29	57%	27	51%	56	54%
4 to 6 hours	5	10%	7	13%	12	12%
7 to 9 hours	3	6%	2	4%	5	5%
Total	**51**	**100%**	**53**	**100%**	**104**	**100%**

Note: Total Park Interviewees = Respondents that visited the Park.

Mode Inside Park

Asking the survey respondents the type of transportation mode they used inside the Battlefield Park will assist the consultant team in recommending alternative transportation options. Eight modes were included in the roadside interview survey: auto (such as personal car, pickup, sports utility vehicle, van, and the like), commercial truck, taxi, bus, motorcycle, bicycle, horse, and foot. As demonstrated in Table 4.10, an average of 69 percent of those travelers visiting the Park used an automobile only.

Table 4.10 Mode Inside Park

Mode	Tuesday		Saturday		Total Park Interviewees	
	Number	Percent	Number	Percent	Number	Percent
Auto Only	33	65%	39	74%	72	69%
Auto and Bicycle	0	0%	1	2%	1	1%
Auto and Foot	1	2%	4	8%	5	5%
Commercial Truck Only	0	0%	1	2%	1	1%
Bus and Foot	0	0%	1	2%	1	1%
Motorcycle Only	1	2%	2	4%	3	3%
Bicycle Only	5	10%	2	4%	7	7%
Horse Only	0	0%	1	2%	1	1%
Foot Only	11	22%	2	4%	13	13%
Total	**51**	**100%**	**53**	**100%**	**104**	**100%**

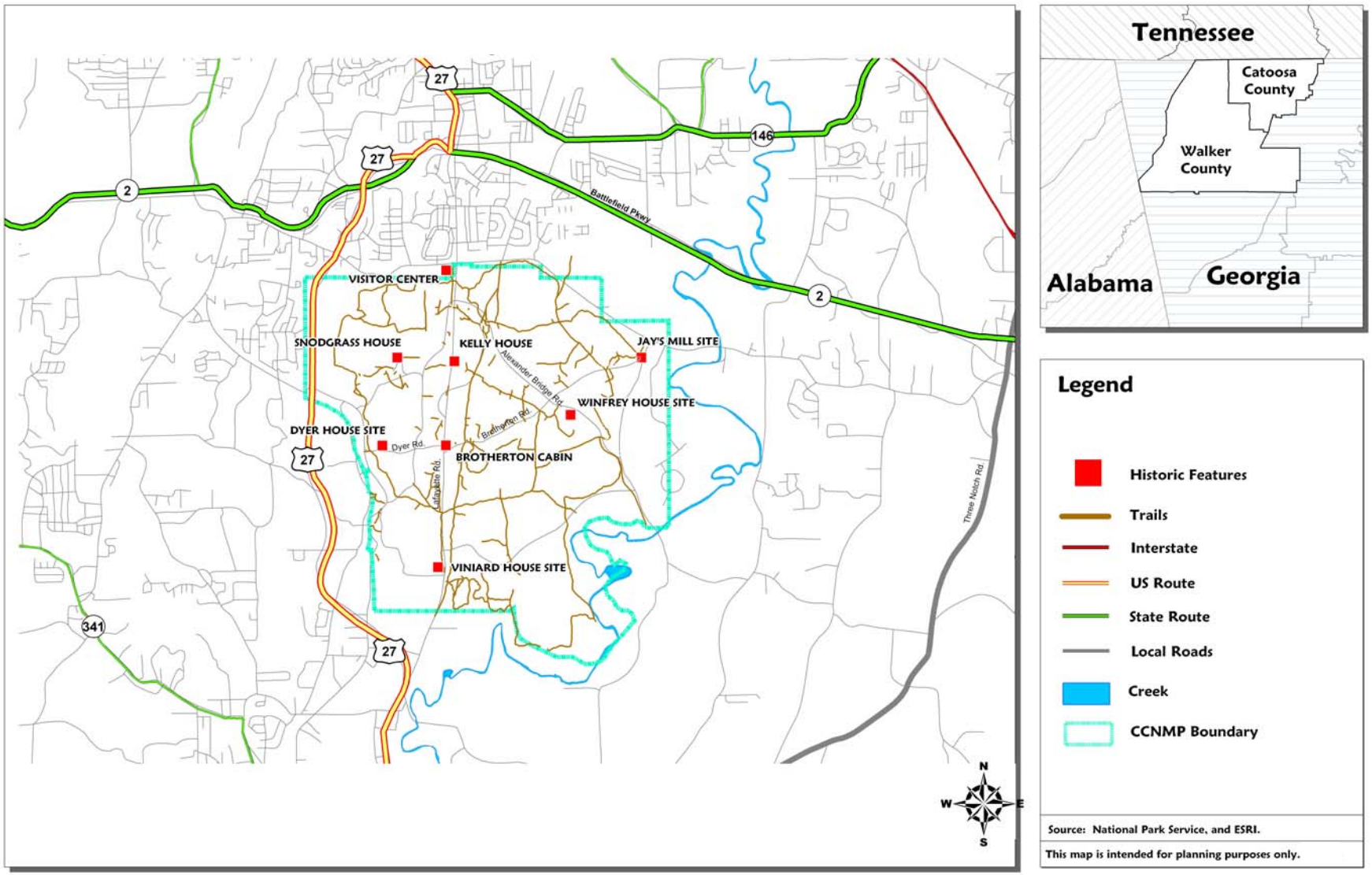
Cultural and Natural Resources

As indicated in Section 3, various data has been collected to serve as resources for defining and understanding the context of the cultural and historic resources in and around the Battlefield Park. Data collection for the study area outside of the Battlefield is ongoing. An important aspect of the data collection effort in the gateway areas to the Park is trying to find linkages between the cultural and natural resources within the Park to those outside of the Park.

Figure 4.16 shows the Chickamauga Battlefield with its trails and major features. There are numerous types of historically significant buildings, structures and objects on the Battlefield. Some of the features existed at the time of the battle, such as the Snodgrass, Brotherton, and Kelly Houses. Other features have significance because of their construction during the Park's early development and include the over 1,400 monuments and markers as well as the limestone bridges, culverts, and headwalls. More detailed documentation regarding the historic, cultural, and natural resources in the Park is included in Appendix F.

For use within the study, the locations identified in the *Chattanooga Area Civil War Sites Assessment* were shown on a map. The *Sites Assessment* process identified 38 sites in Tennessee and Georgia that have Civil War historic significance and are not currently protected or part of the NPS system. The sites were ranked using evaluation criteria that included the sites' historical significance, the current state of preservation, threats to the sites, and the sites' preservation and interpretation potential. Six of the sites are in the Traffic Impact Study area in the gateway corridors. One location of particular interest is at the southeast corner of the Battlefield Park at Alexander's Bridge. One of the desired conditions at this location is to close the Alexander Bridge Road to automobile traffic. A summary table and map of the six sites is included in Appendix G.

Figure 4.16 Chickamauga Battlefield Trails and Major Features



Planned Projects

The sources consulted in order to identify planned projects in the study area included GDOT, the Chattanooga RPA/MPO, Walker County and Catoosa County. For planning purposes, the short range and long range transportation projects were mapped. A summary table and map of the planned projects is included in Appendix G.

5 Next Steps

The entire study shall be completed by April 2004. The remaining tasks include completing the analysis and evaluation of the transportation system, including refining the travel demand model; performing the air quality analysis within the modeling process; identifying and evaluating alternatives in both the Traffic Impact Study and the Subarea Transportation Plan areas; developing recommendations; and preparing the draft and final reports. Public and stakeholder involvement efforts are ongoing through the remainder of the study.

On September 29, 2003 a SPP workshop and a PCC meeting will be conducted in Fort Oglethorpe. The purpose of the workshop and meeting is to review the identified issues and desired outcomes and finalize the evaluation measures for the Subarea Transportation Plan and Traffic Impact Study. The input from both groups will be incorporated into the completion of Task 2.

The study's website will be updated in mid-October and a newsletter will be published that presents the preliminary findings of the transportation system evaluation.

Technical memorandums will be completed for Tasks 2 and 3. The Task 2 memo will finalize issues and needs identification and present findings from the transportation system analysis, including the travel demand model output. The data collected from the cultural and natural resources evaluation in the gateway corridors outside the Battlefield Park will be documented.

A crucial Task 2 element is refining the travel demand model. The flow chart included in Appendix H illustrates the next steps for refinement and subarea validation of the base year travel demand model, including how the license tag survey and roadside interview survey data will be incorporated into the model. Due to exclusion of the US 27 relocation in the existing 2000 network, it is recommended that the 2000 model be updated to a base year of 2003, using socio-economic interpolations, to accurately reflect current travel patterns for the purposes of this study. A cordon line select link analysis will be completed within the base year model and compared against results from the travel surveys to determine if any adjustments will be needed to better validate the model.

Upon completion of the base year subarea validation, the 2025 LRTP model will be refined. Any base year traffic analysis zone (TAZ) and network attribute revisions made in the 2003 model will be reflected in the future year model. Future year socioeconomic projections will be evaluated for reasonableness in comparison with existing available traffic counts. Any locally planned developments that are likely to take place by 2025 but are not included in the adopted 2025 socioeconomic data may also be considered. The updated 2025 model will be used to identify any needed roadway widenings or new corridors within the study area.